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LECTURE I.*

Delivered on May 1st, 1928.

BEFORE beginning my lectures I should like to acknowledge how much help I have received from others in their preparation. By far the greater part of the work has been joint work, and I should like specially to thank Dr. W. W. Payne, formerly Parsons Research Fellow at Guy's Hospital, for his willing and conscientious coöperation in the greater part of it.

HISTORICAL.

The subject of visceral sensation is a wide one, and has been investigated from many points of view. Thus, if pain is taken for consideration, as it is the sensation that has been dealt with most frequently, there is the problem as to whether it is felt in the organ itself, and whether it is at the same time referred to the external coverings of the body as was originally suggested by Ross.[1] There is the detailed work of Head[2] on the relation of these referred areas of pain to the underlying viscera by means of nervous connexions running through the spinal cord; there is the closely related work of Mackenzie[3] and his view that *all* visceral pain is felt superficially in the skin, voluntary muscles, and loose underlying connective tissue of the body wall. These problems have been considered time and again by different authors, and the general conclusion come to was that Ross was correct in his original presentation of the subject.

Then, again, there is the problem of the uninsulated character of the pain nerve-endings, as described by Trotter[4]; there are the problems concerned with afferent paths of sensation, such as McDowall[5] has touched upon for visceral sensation, and Adrian[6] also has dealt with as regards common and visual sensation. In this connexion it is right to emphasise how obscure at present are the problems concerned with visceral sensation. At least it is admitted as regards other sensations that light waves, sound waves, chemical agencies, mechanical strain with deformation of end-organs, are adequate stimuli for sight, hearing, taste, touch, pressure, and muscle sense. But as far as visceral sensation is concerned, there is no general agreement even as to the nature of the stimulus itself. It is to this latter problem that these lectures will be primarily devoted.

Looking backwards it is easy to see that if again pain is taken as the subject of inquiry, two main theories have been advanced as to its nature. Magendie,[7] one of the classical investigators, described the severe pain which accompanies the swallowing of a large bolus as being produced by the distension of the nerve-fibres of the pectoral part of the œsophagus. While Haller[8] had observed that the bile-duct and ureter were insensitive to mechanical stimuli of various kinds, though they produce very intense sensations during the passage of gall-stones or renal calculi, Sherrington[9] has pointed out that the stimuli to produce sensation in viscera must be *adequate*, or, to be precise, mechanical stimuli to produce pain are distensile. This is the point of view taken up by Hurst[10] in his well-known Goulstonian Lectures, and he has gone further in suggesting that all types of visceral sensations, except hunger, are of the same nature, and are produced by tension of different degrees on nerve-endings in the muscles.

A second theory of visceral sensation was originated by Cannon and Washburn[11] in their well-known paper on hunger. Defining hunger as a dull ache or gnawing sensation referred to the lower mid-chest region and the epigastrium, they found that the pangs were associated with those gastric (and œsophageal) contractions that Boldireff had previously described. However, they state that almost invariably the contraction reached its maximum position before the record of the sensation was started, drawing the conclusion that the contraction caused the sensation, and that it was not the hunger that caused the contraction. Carlson and his co-workers[13] have greatly amplified these observations. Again, Mackenzie[14] has argued that vigorous peristalsis is the cause of visceral pain, and there is a well-known clinical observation of his on a patient on whom he was operating when pain was produced every time a peristaltic contraction of the bowel converted it into a thick fleshy rod.

Hurst,[15] while stating that peristalsis is not itself a cause of pain, has combined both these theories by suggesting that in both stomach and intestine and other hollow viscera a downward wave of peristalsis produces a ballooning of the viscus just below against some point of resistance such as the spasm or achalasia of a sphincter or a foreign body. He believes that the ballooning is responsible for the pain, since the nerve-fibres in the muscle are stretched. Cannon's graphic description[16] suggests that pain of this kind may perhaps occur in intestinal obstruction. He says:—

> "The moving constrictions were evidently powerful, for as they advanced the walls of the canal in front were bulged widely by the compressed contents; and when the peristaltic ring could no longer withstand the pressure it was causing, the contents squirted back through the advancing ring for some distance along the gut."

But evidence will be given that the commonly occurring gastric pain is certainly not due to movements of this nature.

POSTURE AND TONE.

Sherrington[17] has applied his conception of posture to the viscera. The size or volume of viscera may vary without necessarily causing much alteration of the internal pressure. His illustrations were taken chiefly from Mosso and Pellacani's work on the bladder and Cannon's work on the stomach. Increase in posture is brought about either by the lengthening of the muscle-fibres in the wall or by the sliding of muscular sheets over one another, so that the thickness of the wall is lessened and the capacity is increased; but while posture is a function easily defined, let us beware in this connexion of the expression "postural tone," since I shall hope to show that tonus or tone is another different property of smooth muscle as readily defined and equally important. In order to obtain a graphic record of the pressure in the œsophagus Payne and I[18] introduced into the latter a toy balloon which was tied onto the end of a long œsophageal rubber catheter. The other end of the catheter was connected with (1) a funnel and water reservoir so that the volume of air in the balloon could be varied; and (2) a water manometer, the other end of which was connected to a Brodie's bellows, so that the excursions of the manometer could be recorded on a kymograph. In recent experiments by Ride and myself the Brodie's bellows has been replaced by a very small form of recording spirometer, made on the principle devised by Krogh.† The experiments were carried out in the lower part of the œsophagus where the muscle is unstriped and the volume of air used was never more than the capacity of the bag—i.e., 50 c.cm. or 200 c.cm., as the case might be. This means that outside the body the bag could accommodate the amount of air used in the experiments without any increase of its internal pressure while its walls remained flaccid. Inside the œsophagus the bag acted as a stretching force, because, owing to the smaller size of the œsophagus, the bag could not

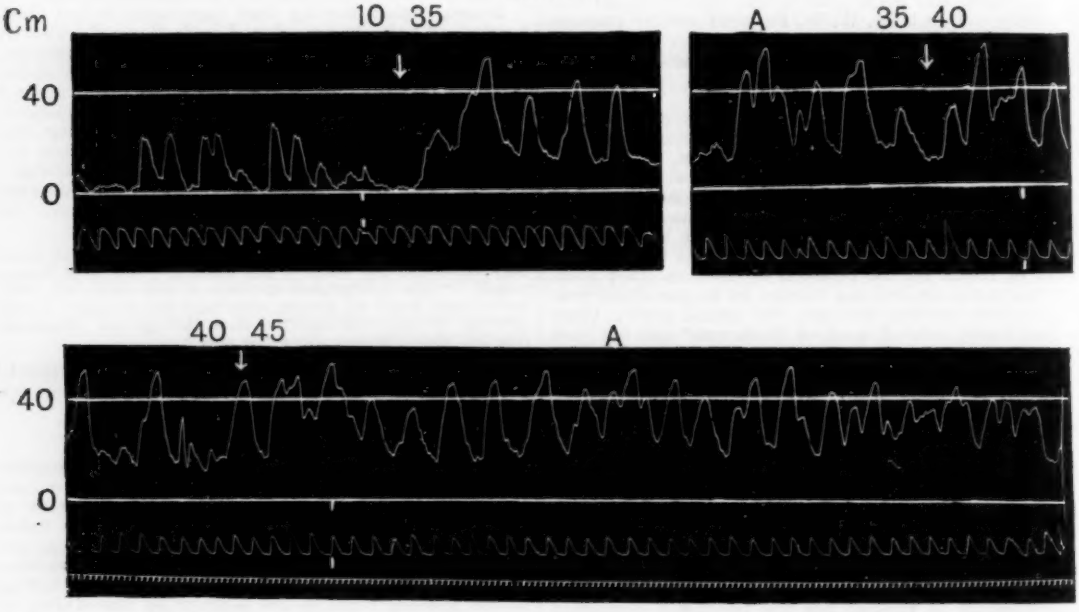
* The preliminary remarks on the foundation of the lectureship have been omitted. Lecture II., with all the references, will appear in a coming issue.

† This apparatus is supplied by C. F. Palmer, Ltd., Brixton, London.

accommodate the amount of air introduced and yet preserve its original spherical shape. It became fusiform.

The advantage of our procedure is that the pressure reached in the bag represents the pressure actually being exercised by the œsophageal muscle. Fig. 1 shows the pressure in centimetres of water recorded in the œsophagus by a rubber bag of 50 c.cm. capacity, when the contents of that bag was increased (at the arrows) from 10 c.cm. up to 45 c.cm. The most striking appearance is the regular succession of peristaltic waves lasting from about 3 to 8 sec. each. These waves may be said to start from a base line which itself slowly varies and they reach a level of over 40 cm. This level tends to remain constant

FIG. 1.



The lower tracing is respiration, inspiration being shown by an upstroke on the respiratory tracing, and a downstroke on the œsophageal tracing. Time in seconds. Simultaneous points are shown by small white strokes. The other figures are arranged similarly.

even though the air in the bag is increased and the base line is rising all the time. A. R. Thompson[19] has obtained similar curves from the bladder. The term systolic pressure may quite well be applied to the tops of these peristaltic waves on the analogy of the heart and the term diastolic pressure to the base line. (This is a wider use of these terms than that suggested recently by Alvarez.[20]) As far as visceral sensation is concerned, it is the diastolic pressure that is important, or more correctly the tension of the muscle during diastole. It is this value that may be defined as the tone of plain muscle. Fig. 1 shows that as the tone rises the peristaltic pressure waves are at first increased; but then they get less, and, finally, they may die away completely as the tone reaches a maximum value.

Unfortunately the term tone has been applied to other conditions for which it is unsuitable, and much confusion has arisen. Cannon,[16] for instance, observed that in various places the intestine underwent a sustained contraction with lessening of the circumference and waves of contraction originated at this point and passed in succession over neighbouring dilated parts. He called the point of sustained contraction a tonus ring, although he realised that the tension of the muscle at the tonus ring was lower than it was elsewhere, where the circumference was larger. In the case of a cylinder the relation between tension T and pressure p and radius r is given by the equation $T = pr$, so that when the pressure remains the same the tension increases with the radius. It is surely a mistake to identify high tone with low tension; but that is what the doctrine of the "tonus ring" has done.

A THEORY OF VISCERAL PAIN.

The theory of visceral pain which has been put forward as the result of our experiments is that pain is due to the stretching with consequent deformity of the nerve-endings subserving the sense of pain, which are situated in the walls of the viscus. When the volume of air in the bag at the lower end of the œsophagus is increased by stages the diastolic pressure and consequently the tone rises, and at a certain point pain is felt. Thus in the case of W. W. P., with 10 c.cm. in the bag the pressure was − 5 cm.; with 30 c.cm. it was 11–15 cm.; with 40 c.cm. it was 17–21 cm., and pain was felt continuously.

Given a state of pain due to this cause there are two ways in which the viscus may react so as to diminish the sensation, and there is a third mechanism which will increase the pain.

(1) *The posture may be increased*, so that the bag is now more readily accommodated inside it, and ceases to act as a stretching force, and the pressure inside it falls. For instance, in Fig. 1B with 45 c.cm. in the bag the diastolic pressure varied from 14–26 cm., and there was no pain recorded at all; but three days later, when the bag was filled at the beginning with 40 c.cm., the diastolic pressure was never below 24 cm., but was often over 30 cm., and pain was felt most of the time. In Fig. 1 the contents of the bag had been increased gradually, and the œsophagus had had time to adapt itself by increasing its posture.

(2) *The muscle may undergo a systolic contraction.* Of course, this materially increases the pressure in the bag, and the tension of the muscle will also be greatly increased because the muscle is doing work

in trying to drive the bag downwards. In spite of this the tension on the pain-endings falls because the diameter of the viscus diminishes. In other words, the muscle by contracting takes the tension from off the nervous structures. If the peristaltic wave succeeds in removing the foreign body the pain will disappear entirely; but if the bag is fixed in position by an attachment outside the mouth the wave must be ineffective, and as it passes by the diameter of the bag will become large again and pain become re-established. It follows that pain may be felt during the *relaxation* of a peristaltic contraction. Fig. 2 provides a proof of this thesis. Two bags were placed in the œsophagus, one just above the other; the upper bag (upper tracing) contained 8 c.cm. of air, the lower bag was empty. At the small white mark 40 c.cm. was suddenly introduced into the lower bag. A series of peristaltic waves passed down causing a rise of pressure in each bag in turn. The introduction of air caused a slight continuous pain, which showed exacerbations at regular intervals indicated by descent of lever. It was observed that the exacerbations of pain came on suddenly; but the sensation ended off somewhat indefinitely. It is clear that the exacerbation was first noticed during the relaxation after a peristaltic contraction, while the contraction itself definitely diminished the sensation. These peristaltic contractions were quite unnoticed by the patient. They were not connected with swallowing or any movement of the throat. Consequently they were an example of what Meltzer [21] has described as secondary peristalsis. In view of the truly surprising nature of this and other similar results we thought it advisable to try to get radiographic evidence of the appearance of the œsophagus during experimental pain. An air bag was made out of two rubber balloons of the same size by squeezing one inside the other. The space between the two was filled with a suspension of bismuth, and the necks tied one over the other on to a catheter. On filling the inner balloon with air the bismuth was spread over its surface, and an air bag was obtained with its walls opaque to X rays. Two catheters with opaque walled air bags were passed into the œsophagus one above the other. Outside the body they were connected with an apparatus for filling them with different volumes of air. When each contained 10 c.cm. the patient experienced a small amount of continuous pain. Fig. 3 (A) is an outline of the bags in situ. The walls were well defined, so that during the two or three seconds' exposure the œsophagus had remained fairly quiet. The lower bag was then filled with 30 c.cm. of air (B), which dilated but did not lengthen it, while the upper bag was practically unchanged. Pain of medium intensity was experienced. After another experiment, which need not be described here, 40 c.cm. air was introduced into the lower bag, while the upper bag still contained 10 c.cm. (D). Pain of maximum intensity was felt about one second before the exposure of the plate began; it then steadily diminished, and was nearly but not quite minimal by the end of the exposure. In the plate it was almost impossible to see the lower bag at all except for the dark shadow of the bismuth at its lower end which lay beneath the dome of the right diaphragm. Measurement shows that the lower bag was increased in length by 1 cm. and the upper bag by 9 mm. The indistinctness of the outline indicated that movement was actually occurring during exposure, and since these movements resulted in elongation of the bags they were clearly due to the passage of a peristaltic wave which successfully squeezed the foreign body and so caused a diminution in the pain produced by it.

FIG. 2.

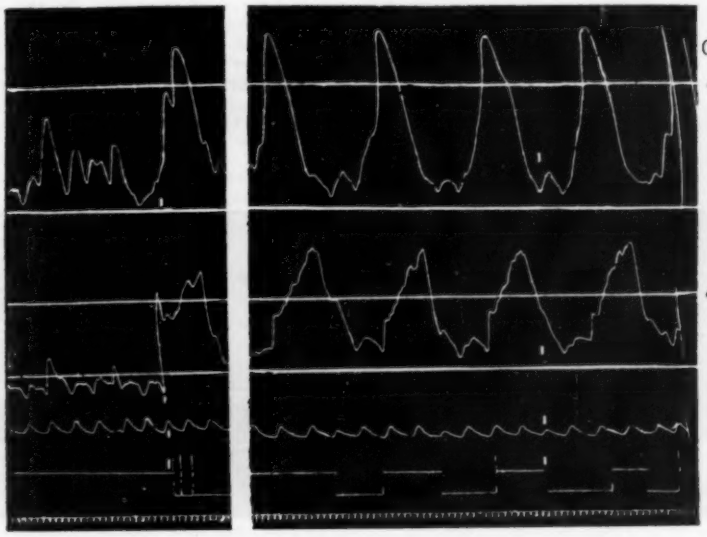
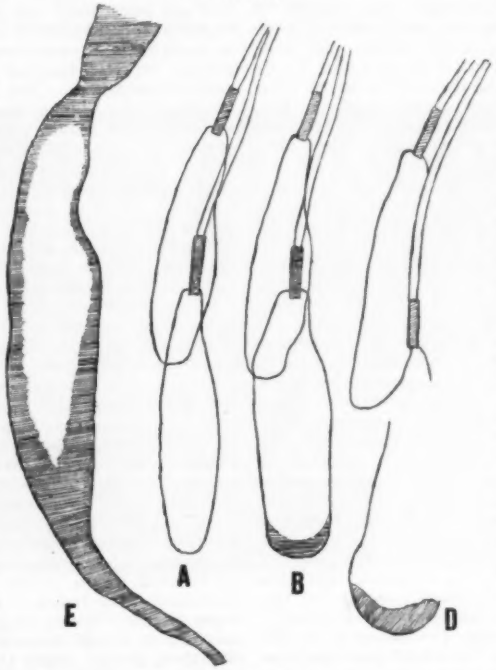


FIG. 3.

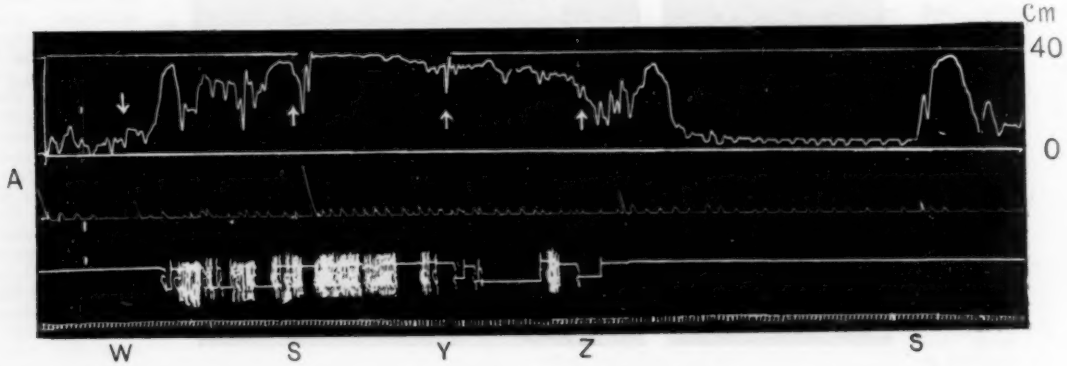


(3) Stretching of the œsophageal wall was an obvious factor in causing pain in Fig. 3 (B); but there is in such experiments a third mechanism to be considered which must help to increase the intensity of the pain; it is due to the *holding up of the peristalsis.*

This was investigated by means of a rubber bag

about the size of a large finger-stall which was placed inside an inextensible linen case and then tied on to a stiff catheter. This was placed inside the lower part of the œsophagus and arrangements were made so that water could be forced into the bag under such a high pressure as to prevent any possible squeezing of it by the œsophageal muscle. An ordinary toy balloon containing 10 c.cm. air and attached to a manometer and recording apparatus was also swallowed, so that the behaviour of the œsophagus above or below the part stretched could be investigated. Fig. 4 gives a tracing from the toy balloon when it was situated just above the incompressible bag. At w 17 c.cm. of water were suddenly forced in and a series of contractions began and pain was felt at once; it was continuous although it varied in intensity. It was worse during the contraction and was so bad that it was impossible for the subject (W. W. P.) to keep the lever down all the time. He found it easier to move it up and down so that the rapidity of the movement indicated the extent of the pain. At a point marked s he swallowed experimentally and pain became still worse, so that eventually a little water, about 5 c.cm., had to be let out. This is marked by the depression at Y. The effect of the swallow was to cause a sustained contraction of 27 seconds' duration at a pressure of 40 cm. It might almost be called a tetanus. There was a peristaltic wave after the water was finally let out at z, and then the œsophagus became quite quiet, showing only respiratory movements and a swallow (s) taken at the end of the experiment was unaccompanied by any painful sensation.

FIG. 4.



In the next experiment the toy balloon was placed below the incompressible bag. On forcing in the water continuous pain was noticed; but it was not as bad as last time because the bag was probably not filled up so tightly. The only effect on the lower bag was a slight increase in diastolic pressure; but none of the peristaltic waves that were demonstrated in the previous experiment succeeded in getting past the incompressible bag, so as to be registered below. Respiratory movements were registered satisfactorily below, so that there can have been no squeezing of the connecting tube where it passed by the incompressible bag. As soon as the water was let out the pain stopped and two peristaltic contractions were now recorded without any painful sensation.

The theory that I have put forward is that visceral pain is due to stretching, but Fig. 4 shows that this theory alone is incomplete because, owing to the incompressibility of the bag, the amount of stretch produced by it must have remained constant from the time the water was put in until a small amount was let out; and yet the pain varied, becoming worse when a peristaltic wave was recorded immediately above the bag responsible for the pain. No doubt during peristalsis the top of the incompressible bag was being squeezed hard by the œsophageal muscle without any shortening of its fibres. An isometric contraction was taking place. At first sight this in itself might be considered enough to cause the pain, and so far there is no absolute proof that this was not the case; but on general principles it is extremely unlikely. For instance, to take an example from skeletal muscle, a tug-of-war is not an essentially painful form of exercise. In the case of the uterine plain muscle the intermittent contractions that occur throughout pregnancy are not painful. Every beat of the heart is associated with an isometric contraction of the ventricular muscle up to the time when the sigmoid valves are opened and blood becomes discharged. Hence it is necessary to look for another explanation of the increase of pain during contraction in Fig. 4. This is provided by another experiment in which two air bags were used (Fig. 5). The upper one contained 5 c.cm. and into the lower one 70 c.cm. air (the full capacity of the bag) were suddenly introduced. Pain of moderate severity was experienced immediately. Minor variations in pain were felt; but not recorded. An involuntary swallow was taken immediately the lower bag was filled and the pressure in both bags at once rose. L, M, N, R are simultaneous points on the tracing and represent the apices of peristaltic waves. The large depressions in the upper tracing are evidently due to the temporary relaxing or inhibition of the muscle that always precedes peristalsis—very obvious in this case because all the rest of the time the muscle was held in a state of sustained contraction similar to that shown in Fig. 4. The pressure exerted by the œsophageal wall was permanently increased at the site of both bags; but the diastolic pressure was much lower at the higher bag and its value is indicated by the pressure registered during the short inhibitory periods—under 20 cm. Except for these short inhibitions the muscle at the upper bag remained all the time in systole at about 40 cm. pressure. However, at the site of the lower bag which acted as the foreign body causing the disturbance, the muscle was being stretched and the peristaltic wave did not succeed in making any impression on the bag except for short periods of time in the middle of systole, so that except at the peaks L, M, N, R the pressure remained during systole at the diastolic value (about 40 cm.). When such an opposite state of affairs is taking place in two contiguous parts of the same organ it is not difficult to see that during systole a state of strain may be set up on the pain-endings in the zone between the muscle contracted down above and the muscle dilated and stretched just below. It is to this strain that the term painful spasm may be applied when a renal calculus or a gall-stone is held up in its progress along the duct, and no doubt this factor is also present in the violent peristalsis of intestinal obstruction described by Cannon, though possibly Hurst's hypothesis of the muscular wave itself producing distension below has an application in this special case.

Summarising, it may be pointed out that on our theory there are two points in the cycle of peristalsis

at which the pain due to a distending bag as in Fig. 5 should become lessened: (1) during the short, sharp relaxations of the muscle above the bag, when the zonal strain would be relieved; and (2) at the peaks on the lower tracing, when there would be some shortening of the stretched œsophageal wall by means of active muscular contraction.

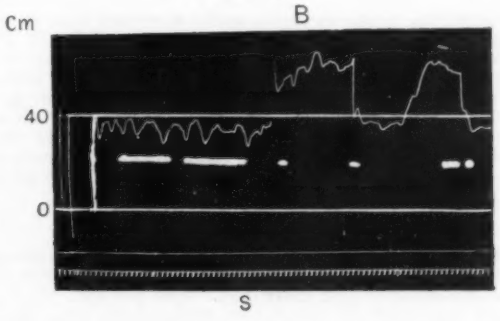
Similarly, there are two points in the cycle at which the intensity of the pain would become increased: (1) at the beginning of systole, when the œsophagus has contracted above the distending bag, but has not yet succeeded in compressing it, so that zonal strain is established; (2) at the end of systole, when the active contraction has passed off and the condition of stretch becomes re-established.

Both Payne and myself took part in these experiments, but there was this difference between us—viz., that on the whole it was much easier with the apparatus used to produce severe pain in him than in myself. Further, W. W. P. is inclined to suffer from indigestion, which is not the case with myself. Radiograms of the lower part of the œsophagus immediately after swallowing a mouthful of barium emulsion showed that my œsophagus was the wider of the two, the maximum diameter for E. P. P. being 2·4 cm. and for W. W. P. 2 cm. With a given volume of air in the bag a bigger excitation might be expected in the latter case. On comparing the pressure curves from the two subjects there was a striking difference, since in the case of W. W. P. single large contractions were often recorded when the tonus remained rather low (see Fig. 2), while in the case of E. P. P. the tonus was increased and the contractions were often multiple, and not very large (Fig. 1). The maximum systolic pressures were about the same in both cases.

When the pain produced by an air bag was of short duration it was recorded during the relaxation stage of a peristalsis, and when the pain was of longer duration it began during relaxation (Fig. 2), which suggests that tension is most likely to be exerted on the pain-endings when the fall of pressure is large and rapid. We have suggested that high tonus is itself responsible for pain; but the steady state of tension which fix posture, which have been described by Sherrington and Bayliss.

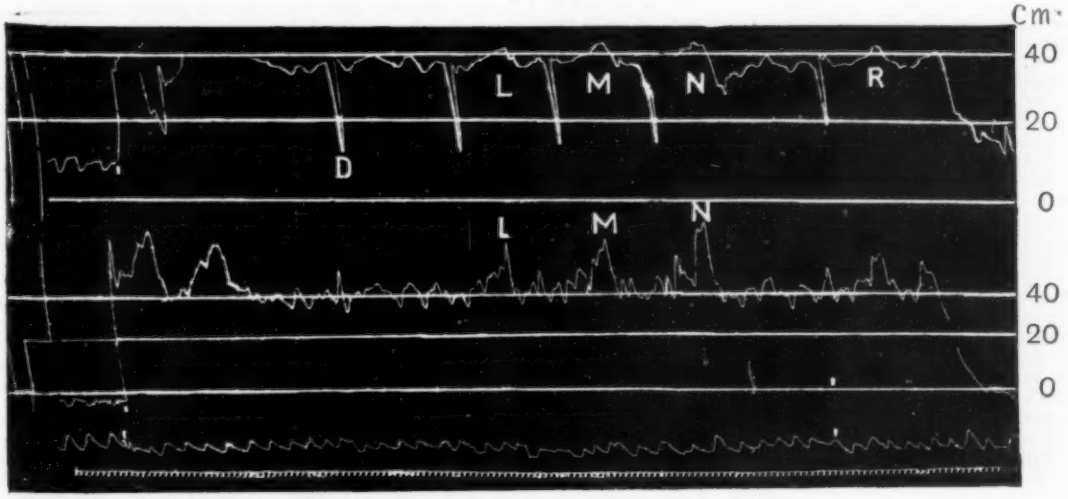
The character of the pain produced in our experiments varied according as it was continuous or intermittent. In the former case it had a burning character, and was reminiscent of heartburn. An unpleasant sensation referred to the throat, but also situated deeply at about the level of the suprasternal

FIG. 6.



notch, was present if the bag was high up in the œsophagus. If it was lower down the pain was usually referred to the costal angle and the lower part of the sternum in the mid-line. When the pain was intermittent it had what was best described as a gripping or griping character, and the relation of the two types of pain was well seen in an experiment on W. W. P. on May 25th (Fig. 6). At first with 45 c.cm. in the bag continuous severe burning pain was noticed. The diastolic pressure was 30 cm., and there were only respiratory variations. A swallow was then taken (s) and this was followed by a series of peristaltic contractions, each of which caused diminution in the pain and converted it from a burning pain into a gripping pain. Later on the contractions stopped, and the pain again became continuous and burning

FIG. 5.



due to this cause may not be so painful as the rapid increase of tension that occurs during the relaxation when the muscle is ceasing to bear the greater part of the strain. Hence a condition of high tonus may be of actual advantage in that it checks the relaxation in its course, and from this point of view it is tempting perhaps to try to draw some analogy between the tonus of plain muscle as we have defined it and the check or catch functions of certain plain muscles

We noticed the same thing on another occasion, when after a period of severe continuous burning pain without contractions a little air was let out of the bag. Large peristaltic contractions then appeared which made the pain intermittent, and so gave it a gripping character. A recent observation by L. T. Ride and myself suggests that the burning element of the pain may be due to simultaneous superficial vaso-dilatation.

After a prolonged experiment entailing much pain cutaneous hyperæsthesia was once felt by W. W. P. over the lower part of the sternum, and several times some ten minutes to one hour after the removal of the bag a pain was felt behind at the angle of the left scapula, as if the muscles were stiff, and there was tenderness on palpation. Another subject who kindly volunteered on one occasion felt pain in the back when the bag contained 40 c.cm. Further, we have to record that experiments of this kind may produce unpleasant results subsequently. Thus E. P. P., who never has indigestion, woke up with quite a severe attack on the day following a painful experiment, and W. W. P. has found that his dyspepsia was made worse by the experiments, and even more than two and a half years after the last experiment he still feels a little uncomfortable after breakfast. We may assume that these experiments caused damage to the structures in the wall. Obviously there is no fundamental distinction between pain produced experimentally and the pain of organic visceral disease.

Clinical Applications.

Payne and I [22] have described an interesting clinical case, which would seem to have a direct bearing on the experiments just described. The patient, W. P., was a man aged 36 with severe gastroptosis who came to out-patients at Guy's complaining of two pains, which he had not noticed before, one at the top of the sternum and the other at the xiphisternum. A radiogram (shown as a sketch in Fig. 3 (E)) had a remarkable appearance, since most of the intrathoracic part of the œsophagus exhibited a constant dilatation, the walls of which were shown up by the trickling down of the barium. There were two constrictions filled with barium, one above the level of the arch of the aorta and the other about where the œsophagus passed through the diaphragm. Comparing this picture with the picture of the air bags in the œsophagus it certainly suggests that in this case the œsophagus produces pain by acting as its own air bag, the air being prevented from escaping by means of the two constrictions. The explanation as to why pain was felt at the top and bottom of the œsophagus rather than in the middle where the dilatation was greatest is probably given by experiments of Boring,[23] who showed that with pressure exerted at different levels in the œsophagus the tendency was to refer the pain above or below, rather than to an intermediate level, and this is decidedly borne out by our own experience.

Owing to the exigency of space in the hospital medical X ray room we were compelled to use a much simpler method than that already described in order to observe the movements in our clinical cases. A finger-stall was tied on to the end of a Ryle's tube and was connected by a T-piece with a syringe and a manometer. The whole system was filled with water and the position of the small bag was determined by X rays which showed up the lead weight at the bottom of the Ryle's tube and the small metal collar inside the Ryle's tube on which the finger-stall was tied. This was marked on the surface of the body and the corresponding level on the manometer tube was determined by means of a straight edge and a spirit level. One of us called out every 5 seconds while the other noted the level of the manometer and the amount of the excursion, and the patient said whether his pain was severe or not at the same time.

The patient W. P. was examined after admission to the hospital, when his œsophageal symptoms had improved, and it was noted that the pain was usually connected with a rise of pressure which was sometimes very great and was due to a peristaltic wave. Close inspection showed that the pain usually increased just when the relaxation was beginning and sometimes the contraction diminished the pain, thus fitting in with the experimental results on ourselves. Between the contractions the pressure was negative, as is usually the case in the intrathoracic part of the œsophagus. We did not carry out observations at the same time as Fig. 3 (E) was obtained, or otherwise the whole of the intrathoracic œsophagus must have shown a positive diastolic pressure. Observations on my colleague showed that positive diastolic pressures in the œsophagus may be obtained (Fig. 7). They were made at lunch time, when the subject was distinctly hungry. A relatively high diastolic pressure was observed when the bag was 1 cm. above the cardia, and at X a burning pain was felt just before the highest excursion of the manometer was obtained. As the bag was raised the pressure fell steadily; but it was still positive at 14 cm. above the cardia, which was the highest position at which the bag could be retained. However, at this time the œsophagus had become less excitable, since a lower pressure was obtained when it was again lowered into the neighbourhood of the cardia. I will also quote observations on the lower end of the œsophagus in the case of a patient 63 years old who had been treated medically for juxta-pyloric ulcer. On June 10th he complained of continuous pain which fluctuated in intensity and was situated in the mid-line about the lower end of the sternum. The diastolic pressure was found to be uniformly high—about 30 cm.—and the systolic excursions were not very large—about 15 cm. When the second experiment was carried out on June 23rd pain had been absent for some days. The presence of the bag excited the œsophagus to some extent to begin with, but soon the pressure settled down to quite a low level—about 5 cm. At the end of the experiment he swallowed; a very big rise of pressure of about 45 cm. followed, and it is interesting that the systolic pressure was as high as any obtained on the previous occasion, when the patient complained of pain. We carried out a number of similar experiments, and we always found that substernal pain due to dyspepsia was associated with activity of this kind.

As an illustration of the causation of gastric pain I will quote the case of a patient—P. F.—a labourer, aged 62, who had had a gastric ulcer in 1909, for which gastro-jejunostomy was performed. This relieved him of his symptoms for a time. The pain then returned and he was operated on again in 1920, when an ulcer was found on the lesser curvature adherent to the liver. The stomach was opened and the ulcer cauterised without affording him any relief. He vomited sometimes and complained of flatulence. X ray showed that the barium passed immediately through the gastro-jejunostomy opening, while the stomach was often over-distended with air. At first, when the stomach was examined, there was very slight pain, and the pressure was about 10 cm. of water, which is about normal. Then the pain suddenly became very severe, and this was associated with a rise of diastolic pressure while big systolic contractions also appeared. While these observations were in progress the level of the manometer suddenly fell, while the large systolic contractions still continued. At the end of the experiment it was observed by X rays that the bag had passed through the stoma and had taken up its position quite low down in the loop of the jejunum. If the zero is corrected for this fall the diastolic and systolic pressures remain very much the same in the jejunum as in the stomach. The pain was felt all the time in the epigastric angle, which was rather higher than the part that was being investigated, though at other times he noticed pain below the umbilicus. Another patient, J. Ch., aged 42, was a case of duodenal ulcer. He had had severe pain for five years coming on one and a half hours after food and accompanied by headache. X ray showed a small transverse stomach which was emptied in one and a half hours. There was also hyperchlorhydria. One of many observations on the duodenum is shown in Fig. 8. But exactly similar results were also obtained in the stomach. He was able to grade his pain, and it will be noticed that as this became more severe the diastolic pressure rose and an eructation often followed, after which the diastolic pressure always fell, to rise again in a minute or so's time. These periodic rises of diastolic pressure in stomach and duodenum with resulting symptoms were always obtained when the patient was fasting; but after a

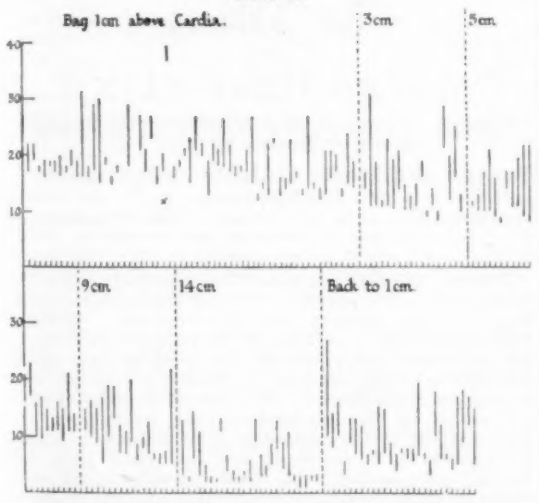
meal the pressure was lower, while the record remained flat and the patient was quite comfortable with no sensations.

We carried out further observations on this patient to find out the relation between the contractions of the stomach and the duodenum by means of two bags each attached to a manometer, while the excursions of both manometers were recorded on a kymograph. It was found that the systolic rises of pressure in the stomach and duodenum were similar to one another; but that those in the duodenum were recorded about a second later than those in the stomach. Hunger pains developed during the experiment, and these again coincided with a rise of diastolic pressure.

The rapid conduction of the large pressure waves from stomach to duodenum indicates that the pylorus must have been patent during the observation, which is opposed to Hurst's view [15] that gastric pain is caused by the ballooning of the pyloric part of the stomach against a closed pylorus by the peristaltic contraction. Dr. Edmund Spriggs and Mr. O. A. Marxer have very kindly allowed me to quote further evidence in the same direction. Their patient had a gastric ulcer high up on the lesser curvature which was examined radiographically during pain. Six rapid exposures were taken at one second intervals during the progress of a single peristaltic contraction. The latter caused a lateral movement at the site of the ulcer with an alteration in its shape, while during part of the cycle the pylorus was again widely patent.

In applying a theory of visceral pain to pathological states it is necessary to consider in the first place whether in the case of chronic peptic ulcer: (1) pain results from the mere contact of the ulcer with the gastric HCl; or (2) from the movement of the ulcer itself in course of the peristaltic wave; or (3) whether the ulcer itself is specially sensitive to pressure effects. The first suggestion is now so generally discredited that I need only mention the fact that pain may be present with peptic ulcer when there is no free HCl

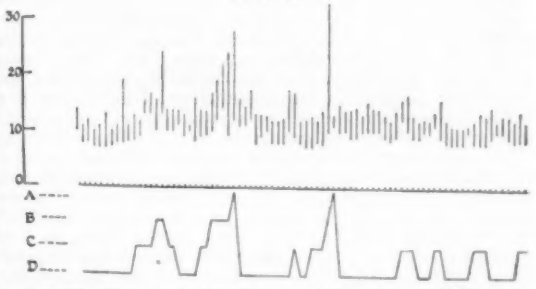
FIG. 7.



of the stomach. Further, the results of our experiments are entirely opposed to the suggestions that the HCl of the stomach (Bolton [31]) or the acrid contents of the stomach (Mackenzie,[2] pp. 134, 140), or organic acids (Maclean [32]) directly cause heartburn when they come in contact with the œsophageal mucous membrane. In an experiment on W. W. P., in which œsophageal pain had been produced mechanically, no sensation whatever was felt when a syringe full of his gastric contents containing free HCl was withdrawn and injected directly into the œsophagus. However, pain is produced in some cases by introducing HCl into the stomach, as Palmer [33] has shown. Presumably the explanation is that HCl produces primarily increase of tonus.

If the second suggestion were true the pain in peptic ulcer, as Bolton has pointed out, might be expected to differ in its nature and time relation from the pain in other conditions where there is no lesion of the visceral wall; but it is now generally recognised that it may be absolutely impossible to distinguish between the dyspepsia of peptic ulcer and gastric carcinoma and the reflex dyspepsias of

FIG. 8.



A. Eructation. B. More pain. C. Less pain. D. No pain.

gall-stones, cholecystitis, appendicitis, and even pancreatitis on the symptomatology alone. Surely the mechanism of the pain must be the same in all these. I should like to mention briefly a case imitating duodenal ulcer. A man, aged 49, had hunger pains, and the small transverse stomach regarded as typical of duodenal ulcer, but no occult blood in the stools. An experienced surgeon said that he was convinced that a duodenal ulcer would be found in spite of negative X ray evidence, but operation disclosed chronic pancreatitis. Furthermore, Payne and I have brought forward evidence that the pain of peptic ulcer is often produced in the œsophagus—i.e., somewhere away from where the lesion is situated.

The third suggestion might be put forward in this form—viz., that peptic ulcer, like other more distant lesions, may produce reflex œsophageal pain; but that in the stomach and duodenum the pain occurs at a lower diastolic tension owing to special sensitivity of the ulcer. Against this view I can bring forward some evidence.[22] In two cases, one of gall-stones and another where gastric and duodenal ulcer had been excluded by operation, abdominal pain was associated with a rise of intragastric pressure; but this was no higher than was the case in our patients suffering at the time from peptic ulcer.

I would support the view that visceral pain is an affair of the whole visceral wall and not of any isolated lesion in it, and that peptic ulcer produces painful effects secondarily by causing reflex increase of tone. Sensation is discontinuous while peristaltic waves are passing, but continuous without them. Further, pain is produced in exactly the same way in any reflex dyspepsia or even when a meal of badly masticated food has been eaten too rapidly. The ulcer *may* produce these reflex effects because it breaks the continuity of the muscle and in a sense acts like a foreign body.

There is evidence in the literature that raised diastolic pressure, which usually means raised diastolic tension, is the factor on which gastric sensation depends. Thus Carlson [18] (p. 67) stated that a certain degree of constant (or tonic) contraction in the empty stomach appears to give rise to a continuous hunger sensation. The interesting observations of Reynolds and MacClure [34] must also be considered. In 10 out of 12 patients they found, by means of X ray examination, a modification of the gastric movements during pain. The peristalsis might be exaggerated, it might die away altogether, or it might become irregular and then die away altogether, or an incisura might be developed. These latter observations show

that the pain had nothing to do with the peristalsis by itself, but it can be explained on our theory as due to increased tonus developing. The same absence of peristalsis was noticed in some of our more painful œsophageal experiments already described. But though continuous, visceral sensation may result from tonus without contractions, I would emphasise the fact that in our clinical cases increased tone and increased peristalsis were usually found together.

During the past ten years or so several papers on the subject of gastric pain have been published by American observers with very conflicting results. In many cases the relation of pain to gastric movement was clearly demonstrated; but in others no such relation was established, and W. L. Palmer,[25] in summing up his conclusions, says that "the pain producing mechanism is not usually dependent on gastric or duodenal tone or motility of pylorospasm; but under certain conditions normal gastric peristalsis may constitute the adequate stimulus." The following criticisms may be brought against all this work: (1) An air bag was usually employed, located in the fundus. The advantage of our small water bag is that it can be readily passed into the pyloric part of the stomach and beyond. We found that in the elongated stomach when the walls sagged together no movements at all were transmitted from the pyloric part of the stomach to the fundus. (2) The air bag was apparently blown up tight and no actual figures are given for the intragastric pressure. Under these conditions the air bag would be more liable to act as a foreign body than our small water bag. This is illustrated by the radiograms of Rogers and Hardt.[26] (3) Often no account is taken of the place where pain was felt, but in these experiments it is essential to differentiate between œsophageal and gastric pain. (4) The mere introduction of 200 c.cm. or more of fluid into the stomach by increasing the radius will increase the tension of the wall and so cause pain, even though there is no increase of pressure recorded, and the discrepancy in some of Palmer's observations may be due to this. Taking all these things into consideration it is not very surprising that in many cases the relation of pain to the mechanical condition of the various organs was often not established.

However, on examining those published cases where pain was found to be related to gastric movement I find that they are divisible into two groups. In one the peristaltic wave has a clearly defined pointed summit, and in this case the sensation is recorded during the relaxation. The earliest example of this kind was published by Carlson [27] (Fig. 1), and he draws the conclusion that "gastric contractions preceded the ulcer sensation just as they preceded the hunger pang." He has further stated that "when the stomach contraction is of moderate severity and the hunger sensation of moderate intensity the hunger sensation gradually ceases at the height of the contraction." A similar observation has been published by Palmer [25] (Fig. 6) and by L. L. J. Hardt [28] (Fig. 3 (A)). It is also interesting that W. H. Ogilvie [29] observed that a patient whose gall-bladder was intubated complained of pain as the pressure fell at the end of a contraction. These observations surely provide the direct clinical proof of the correctness of our theory that a successful peristaltic contraction relieves visceral pain which appears again when the condition of tension on the nerve-endings becomes re-established during peristaltic relaxation. It is true that Carlson [27] and Hardt [28] have suggested that this result may be explained by the pain being produced by contraction of the pyloric end of the stomach, which occurs some seconds after the contraction of the fundus in which the bag is situated. But this suggestion does not give a true picture of events in the stomach. We have found by simultaneous X ray and manometric observation of one case that the peak of the pressure wave corresponds with the deepest indentation of the greater curvature, while the peristaltic wave sweeps round towards the pylorus. The pressure changes are communicated simultaneously through the stomach, and in the case of J. Ch. very rapidly to the duodenum. Thus we may conclude that the end of the peristaltic wave recorded in the fundus is simultaneous with the end of the wave produced in the pyloric part of the stomach. But this is a point that Dr. L. T. Ride and myself are further investigating by two small similar bags in different parts of the stomach. The radiograms of the bags in situ by Rogers and Hardt [26] suggest that the stomach acts as a whole as far as pressure is concerned, since the bag which occupies the greater part of the stomach is clearly being compressed above and below simultaneously.

Again, a graphic record has been published by Palmer [25] (Fig. 7), in which the peristaltic wave has a flat top of some seconds' duration, and in this case the pain coincides with the contraction. It is reasonable at present, I think, to regard this flat-topped wave as being due to a sustained peristaltic contraction which is held up in its course, possibly owing to pylorospasm, so that a condition of painful strain is set up similar to that occurring with the incompressible bag in the œsophagus.

At the end of the previous section we stated that on theoretical grounds the very beginning of a peristaltic wave might be painful. We have some evidence of this from our clinical investigations. For example, W. W. P. (Fig. 7) noticed pain before the highest excursion of the manometer. It is clear that further work on this point is required.

The experiments of A. W. Mayer have been dealt with elsewhere,[18] but it is to be noted that the addition of barium chloride to the peritoneal cavity, which he found to be a cause of pain in certain animals, produces exactly that condition of high tone and held-up peristalsis that we have already shown to be the cause of visceral pain. Further, Mackenzie's [14] observation that pain was associated with the contraction of the bowel into a thick fleshy rod and Ryle's [30] observation on the pain and tenderness of a spastic colon may be explained in the same way.

An Address

ON

SACRO-ILIAC PAIN

Opening Discussion at a Meeting of the Medical Society of London on Dec. 10th

BY WILFRED HARRIS, M.D. CAMB., F.R.C.P. LOND.,

SENIOR PHYSICIAN TO ST. MARY'S HOSPITAL, AND TO THE HOSPITAL FOR NERVOUS DISEASES, MAIDA VALE.

DURING the last ten years increasing attention has been paid to the slighter forms of sacro-iliac disease, both in this country and in America. Although Fleming in this country and Bertherand in Belgium had described dislocation of this joint as long ago as the middle of the nineteenth century, it was not until Goldthwait of Boston, in 1905, forced the subject upon the notice of the profession, that relaxations and subluxations of the sacro-iliac joint became generally recognised as a source of the low back pain and chronic sciatica met with chiefly in women, following slight injuries, childbirth, postural relaxation under an anæsthetic, or similar muscular and ligamental strains, such as may be met with in football, wrestling, and in the lifting strains of industrial occupations. A not uncommon cause of the post-operative backache, usually met with in women, is due to the prolonged relaxation of the back muscles during an anæsthetic while lying on a flat table, when the surgeon has omitted to place a cushion under the small of the back.

ANATOMICAL FEATURES.

The sacro-iliac joint is what is known as a diarthrodial joint, is lined by cartilage, and has a synovial cavity, best marked in the female at the time of childbirth. The facets of articulation between the

ilium and sacrum are somewhat auricular in shape, and in the erect position the weight of the body transmitted through the lumbar vertebræ to the sacrum produces a shearing strain in the two sacro-iliac joints, tending to force the sacrum downwards between the two ilia. The joints are supported mainly by the anterior and posterior sacro-iliac ligaments, of which the posterior is by far the stronger and most important, so strong indeed is it that it has been found impossible to rupture it experimentally, the bony surfaces tearing away first. In addition, the glutei and erector spinæ, by their tonic contraction acting on the sacrum and ilium, help to support the joint. In the male there is usually sufficient joint locking to prevent any but the smallest movement, but in the female pelvis the bony surfaces are smoother and the joint capable of greater range of movement, especially during parturition. It is therefore in the female more particularly that sacro-iliac strains and subluxations are liable to occur, owing to the two factors of greater mobility of the joint and weaker muscles.

Types of Sacro-Iliac Lesions.

As already said, the ligaments are practically impossible to rupture, and therefore we shall not expect ever to find a true downward dislocation of the sacrum, but a torsion or partial rotation of the joint, in which the sacrum may tilt either forwards or backwards upon its articulation with the ilium. The commoner form is that in which the sacrum is rotated backwards, producing "flat back," with more or less obliteration of the normal lumbar curve, such as may occur after a prolonged anæsthetic. In the relaxation form of subluxation, produced by prolonged standing, especially in heavy women with pendulous abdomens, the sacrum may be tilted forwards, causing an exaggerated lordosis, with symptoms of dull chronic feeling of fatigue, with pains in the lower back, radiating up the spine. In this type there is no hamstring spasm present, though in the flat back variety spasm of the hamstring muscles becomes so severe that extension of the leg upon the thigh flexed on the abdomen becomes impossible without considerable pain referred to the affected joint.

Diagnosis of these subluxations by X rays appears to be impossible except in rare cases, and this has been cited as a reason for doubting the possibility of their occurrence in any frequency. Whenever possible to obtain, stereoscopic X ray pictures of the pelvis should be insisted on, and lateral as well as antero-posterior views.

Clinical experience of these low back pains, fortified by their speedy or even sudden and dramatic relief by measures calculated to reduce such subluxations, should convince us of their importance in the symptomatology of chronic pains in the back, which have been in the past, and indeed still are diagnosed variously as lumbago, muscular rheumatism, and chronic sciatica.

These strains of the joint may be divided into three classes: (*a*) sudden or acute, (*b*) subacute, (*c*) chronic. An example of the sudden form will be that resulting from a violent blow, as in a motor accident, or from a fall.

Some weeks ago I saw a lady who was supposed to be suffering from chronic sciatica. She was in constant pain and unable to get about much, limping on the right leg and complaining of pain down the back of the leg, and also around the hip into the groin. She gave a history of sudden onset of the pain following an accident in her car, a small saloon, which was struck from behind by a heavy lorry, the blow jarring her right buttock and being followed instantly by local pain and difficulty in walking. There was local tenderness on pressure below the posterior superior iliac spine on the right side, with pain on compression of the iliac crests, while the Achilles jerk was normal, and her spine was somewhat rigid and appeared to have lost somewhat of the lumbar curve. I came to the conclusion that it was a case of true sacro-iliac subluxation due to direct injury, and handed her over to Mr. E. F. Cyriax for manipulative treatment, with excellent results.

The acute form of sacro-iliac lesion is liable to be produced by a heavy lifting strain when stooping, when the sensation may be felt as of something snapping, followed by a difficulty in holding the body erect, with the appearance of sharp pain in the lower lumbar region. This pain may disappear after a rest, reappearing and becoming worse next day, causing practically complete disablement, the pain being at first localised in the region of the joint, and later spreading through the whole lumbar region, buttock, and leg on the affected side. Mr. P. J. Verrall has well described the patient's sensation as one of extreme instability, and of "falling to pieces."

Nerve Relationships.

All the nerves in the neighbourhood of the joint supply it with articular branches, the nerve-supply being thus derived from the lumbo-sacral cord, the first and second sacral nerves, the obturator, and the superior gluteal. The lumbo-sacral cord, which it will be remembered is made up of a large branch from the fourth lumbar anterior division to join the fifth lumbar nerve, passes downwards and outwards in front of the lower third of the sacro-iliac joint on its way to join the first sacral nerve and the sacral plexus. Since this lumbo-sacral cord is an anterior relation of the joint it is no matter of surprise that in disease of this joint neuralgic pain may be referred along the distribution of the sciatic nerve down the leg to the ankle and foot, while in other cases, through the obturator nerve, pain may be complained of in the region of the hip-joint and groin and even in the knee. Tenderness on pressure over the affected sacro-iliac joint is almost constant, and compression of the iliac crests or pressure on the pubes will cause pain referred to the affected joint. Pain will be aggravated by walking, by sitting on the affected side, by standing, or by lying flat on the back, while bending becomes difficult and lifting a weight almost impossible. The posture may be diagnostic, the lumbar curve either flattened or with an exaggerated lordosis, and the spine tilted to one side, usually away from the affected joint. In walking upstairs much disinclination is shown to throw the weight on the leg on the damaged side, more so than in osteo-arthritis of the hip-joint, which is one of the conditions which is liable to be confused with sacro-iliac joint disease. Goldthwait's symptom is pain referred to the joint or to the leg of the affected side when the leg is extended on the flexed thigh. When this test causes pain referred to the damaged sacro-iliac joint, it is probably caused by spasm of the hamstrings through their attachment to the ischial tuberosity pulling on the ilium and tending to force rotation of the ilium on the sacrum. This method may indeed be used to reduce the backward rotation of the sacrum, causing "flat back," but probably the better and less painful method is to exert pressure with one hand on the sacrum, while the other pulls the ilium backwards by gripping the anterior superior spine. When lordosis is exaggerated by a forward rotation of the sacrum, any forced hyperextension of the leg can only do harm, and rest in bed in the supine position is probably advisable. The treatment, however, of sacro-iliac subluxations, whether by manipulations under an anæsthetic or without, by strapping or other supports, or by the operation of permanently fixing the joint by arthrodesis, is beyond the scope of my opening remarks, and will no doubt be adequately dealt with by the surgeons.

Differential Diagnosis.

The differential diagnosis from sciatica, spinal cord disease, arthritis of the hip, lumbago, and sacral fibrositis are, however, of pressing importance from the medical point of view. It is the American surgeons particularly who have during the last ten years investigated and written upon the subject of sacro-iliac sprains, and have helped to rescue many sufferers with chronic pain in the back from the chiropractors, osteopaths, and other professors of manipulative movements. Goldthwait,[1] who in 1905 based his paper on 500 cases, went so far as to say

[1] Goldthwait, J. E.: Boston Med. and Surg. Jour., 1905, cliii., 280.

that most cases of chronic sciatica are due to sacro-iliac subluxations.

Hoyt Cox,[2] of Chicago, also wrote last year: "Chronic sciatica is, of course, only a symptom, and is usually due to pressure or irritation of the sciatic nerve from some external source. However, it may be due to focal infection in rare cases." Without going so far as to accept this sweeping generalisation that chronic sciatica is usually a surgical disease, we should always be on our guard not to overlook injury or muscular strain damaging the sacro-iliac joint and simulating sciatica through its pain reference along the lumbo-sacral cord. This error we shall be less liable to fall into if in our routine examination of the patient we always test for tenderness over the joint by pressure on and below the posterior iliac spine, and also try the effect of compression of the iliac crests. When neither of these tests causes pain referred to the joint, we shall be fairly safe in excluding sacro-iliac sprain.

Again, Lasègue's sign in sciatica is the production of pain referred along the nerve when the leg is extended on the flexed hip, a sign already claimed by Goldthwait as due to sacro-iliac subluxation. There can be no question that this sign is commonly present in many acute sciaticas, and may still be present when the acute stage has passed into the chronic stage, so we shall probably err on the side of safety if we do not accept the whole of Goldthwait's dictum, but limit the value of his sign of sacro-iliac sprain to those cases in which the pain is referred to the actual joint region, whether or no there is also pain referred down the leg.

Chronic Sciatica.

A valuable sign in subacute and chronic sciatica is loss of the Achilles jerk, indicating that the neuritic process has passed inwards from the nerve sheath and is actually involving the nerve bundles. This is probably the earliest sign indicating actual damage to the nerve-fibres, invariably preceding anæsthesia of the foot or muscular wasting, and usually to be found before the patient complains of coldness, numbness, or blueness of the foot. The posture in sciatica may give rise in certain cases to a suspicion of sacro-iliac sprain or subluxation. Though there may be tilting of the spine to the same or to the opposite side, there will be none of the extreme disability described by Verrall as "falling to pieces," with the extreme disinclination to throw the weight on the hip of the affected side in going upstairs. In some cases of chronic sciatica the tilting to the same side is so great that the patient appears drawn down on that side, limping with knee bent, and a homolateral scoliosis. In that type the Achilles jerk may be lost, and the site of the peri-neuritis is at the sciatic notch, and affects the upper two or three inches of the nerve in this region. This type is often curable by massive saline injections into the nerve.

Another rarer type, in which contra-lateral scoliosis is a marked feature, is more chronic even than the last as a rule, there is no loss of the Achilles jerk, no muscular wasting or numbness of the leg, but pain is complained of in the sciatic distribution, and there is often tenderness on deep pressure over the region of the fourth lumbar transverse process on the affected side. The spine is tilted towards the opposite side, sometimes as much as five inches when a plumb line is dropped from the seventh cervical spine, and pain down the affected leg is produced by forcibly pulling the shoulders towards the affected side when counter pressure is kept up by the knee against the patient's hip. The tilting is not due to the pelvis being thrown to one side with the heel raised, as with both heels on the ground the crests of the ilia are perfectly level. The cause of this type of sciatica appears to be some inflammatory lesion, such as fibrositis, irritating one or more nerve-roots close to the intervertebral foramina. The tilting of the spine is a protective scoliosis, so as to open out as far as possible the intervertebral foramina on the affected side. I have seen one such case of left-sided sciatica, with lateral scoliosis towards the right, which was cured instantaneously by an injection of alcohol deeply into the tender area behind and below the left fourth lumbar transverse process. Saline injections into the nerve I have found of no value in this type of sciatica, but they usually recover after prolonged rest in bed, aided by massage, radiant heat, and ionisation. It is clear, therefore, that these cases are to be distinguished from sacro-iliac sprains, and have nothing in common with them.

[2] Cox, H. H.: Surg., Gyn., and Obst., 1927, xlv., 637.

Traumatic Sciatica.

Chronic sciatica may be the result of a fall on the buttock, actual contusion of the nerve probably resulting from the injury. I have seen such a case recover in less than a week after massive saline injection into the nerve at the notch, though the pain and disability had already lasted for many weeks following a fall in the hunting field. Similarly, another case of a coal-miner, when walking along an underground gallery, in order to save himself from being run down by a trolley load of coal, had to throw himself suddenly sideways, falling on a mass of loose debris. Immediately he felt severe pain in the buttock and was unable to rise, the pain later spreading downwards like a sciatica. After three months of constant pain and disability he was sent up to St. Mary's Hospital where I injected the sciatic nerve at the notch with 80 c.cm. of saline. His cure was most dramatic and almost instantaneous. This was many years ago, before I knew anything of sacro-iliac sprain, and if I saw such a case now I should carefully examine him from this point of view, but the result of his treatment is proof that his sciatic nerve and not his sacro-iliac joint was at fault, the nerve probably being irritated by fibrositic scar at the notch, resulting from a ruptured muscle bundle and hæmorrhage.

It was from Mr. Blundell Bankart that I first learnt several years ago how easy it may be to mistake sacro-iliac sprain for a chronic sciatica. I had been treating a lady for some time with rest in bed, and had given her two saline injections into the nerve without benefit, when he was called in, made the diagnosis of sacro-iliac subluxation, and manipulated the pelvis under an anæsthetic, getting the "click" that is said to occur as the joint slips into place, with a resulting immediate cure. The meaning of this click has been variously explained, some authors saying that it is produced by rubbing of thickened fibro-cartilage in the joint, as the result of a chronic inflammatory process.

Sepsis.

Septic infection is an important cause of neuro-fibrositis and joint inflammations, and its influence was well shown in the case of a young married woman of 31, who had had periodic lumbar pain for five years following childbirth. For four months before I saw her she had been complaining of sciatic pain shooting down to the left ankle, with pricking pains in the calf. The Achilles jerk was normal, and there was general tenderness in the buttock, the pain appearing to come from the bottom of the spine. I was suspicious of sacro-iliac relaxation, owing to the history of pain following childbirth, but could get no evidence confirmatory of this on testing. The pain was aggravated by coughing or sneezing and by extension of the knee on the flexed hip, and she was unable to wear a high-heeled shoe, as it increased the pain. No treatment appeared to be of any avail, and the pain continued for some months until a septic molar tooth was extracted, when all the symptoms cleared up in a few days.

Other Causes of Pain in the Back and Legs.

This is not the place to enumerate all the various causes of sciatica, which are legion, but in the differential diagnosis of sacro-iliac pain it is important to exclude diabetes. Tubercle may attack the sacro-iliac joint, with the formation later of a cold abscess.

Tubercle of the sacrum or of the lumbar vertebræ may be recognised by radiography, though new growths in the rectum or in the pelvis, or of the lumbar cord or cauda equina may show nothing on radioscopic examination without special arrangements. An opaque enema may be of the greatest assistance in the radioscopic examination of the rectum and colon, while tumours within the spinal theca damaging the nerves or cord may be indicated by X rays after an injection of lipiodol by cistern puncture, the heavy opaque oil falling down through the cerebro-spinal fluid to the site of the tumour, where it is held up and prevented from reaching the conical termination of the thecal cavity at the level of the first sacral body.

Clinically, such tumour should produce symptoms of muscular wasting and anæsthesia, according to the roots involved, with appropriate loss of reflexes, thus the knee jerks will not be affected by lesions below the fourth lumbar root, the Achilles jerk being served by the first sacral.

Sacralisation.

Sacralisation, or semi-sacralisation of the fifth lumbar vertebra, is another cause of low back pain, with or without pain referred along the sciatic nerve. This process of sacralisation consists usually of a much enlarged transverse process on one side which may articulate either with the top of the sacrum or with the iliac crest. All degrees are met with up to total bony ankylosis of the fifth lumbar vertebra with the sacrum. Owing to the fact that the fifth lumbar nerve is the largest of the lumbar nerves, whilst its foramen between the fifth lumbar vertebra and the sacrum is the smallest of the lumbar foramina, congestion of the venous plexus around the nerve or a rheumatic or infective fibrositis may very easily lead to compression of the nerve, and thus a referred sciatica is set up, and even symptoms of definite neuritis, with wasting of the leg muscles below the knee. Sacralisation is only rarely found in Europeans, and is a retrograde developmental anomaly, being commonly found in non-European races, and almost invariably in the anthropoid apes.

Osteo-Arthritis.

Osteo-arthritis of the hip-joint is a fertile cause of error in the diagnosis of sciatica, and may similarly be mistaken for sacro-iliac sprain. The pain is usually around the hip into the groin, and even into the knee, while rarely the only pain complained of may be below the knee down to the ankle. On examination, there will usually be found limitation of rotation and of abduction of the hip, with pain on movement, the pelvis tending to move as a whole with the thigh movement. X rays will show mushrooming of the head of the femur, loss of the articular cartilage, and disappearance of the articular space, with lipping from osteophytes at the edges of the acetabulum. Many of these cases are, however, complicated by the presence of true sciatica in addition. Since the nerve passes very close to the back of the joint, it is not surprising that the chronic inflammatory process giving rise to osteo-arthritis of the hip may also invade the sheath of the sciatic nerve.

X rays have comparatively recently demonstrated a number of cases of *osteitis deformans*, or Paget's disease of the bones, invading the ischium and other bones of the pelvis and producing symptoms that are easily mistaken for chronic sciatica.

Just as sacro-iliac enthusiasts in America have asserted that nearly all chronic sciaticas are really sacro-iliac sprains or subluxations, so also have similar assertions been made by spa physicians that all sciaticas are really secondary to osteo-arthritis of the hip. Steering a middle course between these all-embracing claims, we may yet learn a good deal from them, and will hesitate to diagnose true chronic sciatica without a careful X ray examination to exclude arthritis of the hip or other bony disease, and at the same time we must not forget to examine for evidence of sacro-iliac disease.

TREATMENT AND PREVENTION OF NON-OBSTRUCTIVE SUPPRESSION OF URINE.

By A. A. OSMAN, *D.S.C.*, M.R.C.P. Lond.,*
PHYSICIAN TO QUEEN MARY'S HOSPITAL, STRATFORD, AND SENIOR MEDICAL ASSISTANT, GUY'S HOSPITAL.

Suppression of urine is at all times a serious symptom and one which calls for prompt treatment. It is, moreover, a condition which is liable to occur at any time and is always to some extent an emergency. Measures for relief, to be successful, must be readily applicable, and must not require elaborate laboratory investigations. The procedure described here has been evolved during the course of a prolonged research on the treatment of nephritis and allied conditions with alkalies. Twenty-four cases of severe, partial, and complete suppression were met with, and as their suppression of urine always reacted satisfactorily to the treatment it was considered desirable to publish them separately in the hope that the measures might prove of value to others. No example of the prolonged complete anuria lasting from 10 to 14 days, described in text-books, has so far been met with, and until such cases have been successfully treated the method cannot be said to be infallible. Anuria of this extreme degree is so rarely encountered in the experience of one individual, however, that it seemed unwise to defer publication of what may prove a valuable therapeutic measure in milder cases.

Total or partial suppression of urine occurs in the following conditions:—

1. Acute nephritis.
2. Acute exacerbations occurring in the course of chronic nephritis, which are usually caused by (*a*) superimposed infection, (*b*) over-exertion, (*c*) the administration of general anæsthetics such as chloroform and ether, and the therapeutic use of certain heavy metals and metallic compounds such as lead, mercury, gold (sanocrysin), and arsenic (salvarsan).
3. Heart failure.
4. Fevers and inflammatory conditions.
5. Acute poisoning by phosphorus, turpentine, and the above-named metals.
6. Collapse after severe operations or the passage of a catheter.
7. Cholera and blackwater fever.

Total suppression may be present for 10 to 14 days before death in rare instances, but a fatal issue from respiratory or cardiac failure quite often occurs before this. Drowsiness, headache, vomiting, contracted pupils, and a subnormal temperature are usually present. Deep coma is comparatively rare, consciousness often being retained to the end. Convulsions are likewise rare or occur just before death. Irregularity of the pulse is a grave sign. Anuria, even when complete, is not necessarily fatal, whilst recovery from partial suppression is not uncommon. Nevertheless this symptom is always cause for grave anxiety as, when it does not itself lead directly to death from uræmia, the accumulated "toxic" substances act adversely on other organs and tissues which may or may not have been previously damaged. Anuria may therefore be a primary or secondary cause of death.

The treatment usually recommended consists of measures designed to promote elimination of waste products through the skin and bowels by means of hot baths, diaphoretics, and purges, whilst counter-irritation is applied to the kidneys in the form of dry cupping, hot applications, and warm colonic douches. Most writers point out that diuretics act best, if at all, after the secretion has once started. These proved remedies should always be tried, although they are not invariably successful. We believe that our method exerts a direct action on the kidney and initiates and maintains the secretion of urine. The underlying

* Working with the aid of a grant from the Medical Research Council.

theory, and the evidence upon which it is based, have been discussed at some length elsewhere.[1]

The cases of partial suppression described include only those in which the urinary output had fallen to six ounces or less in the 24 hours. No cases have been included in which the urinary output was on the increase when treatment was commenced. The distinction is important. The method consists simply in giving by mouth (or per rectum when coma is present) a mixture of alkaline salts in increasing amounts until diuresis is obtained. It has been found that in cases of suppression and of nephritis with oliguria there is an associated acidosis—acidosis being here defined as a condition in which the plasma bicarbonate is reduced (van Slyke). I do not propose to discuss now the relation of the acidosis to renal function—i.e., whether it is caused by or is the cause of the latter, but the plasma bicarbonate is decreased in many conditions in which there is no obvious impairment of renal function, and frequently, if not always, when there is suppression of urine. The plasma bicarbonate was markedly reduced in each of the nine cases in which it was estimated in this series. When this is the case alkalies can be given in comparatively large amounts without danger, and, as the present series of cases suggests, in amounts sufficient to produce diuresis. If further investigation confirms the findings recorded here, it may be said that the plasma bicarbonate is always reduced with suppression of urine, and that it will be safe to give alkalies in amounts sufficient to cause diuresis without a preliminary investigation of the bicarbonate content of the blood, as secretion of urine seems generally to begin when the bicarbonate has reached a normal level. Until this level is exceeded little danger is likely to ensue. The practice of giving alkalies in large amounts when the plasma bicarbonate is not known to be decreased cannot be too strongly condemned, as symptoms of alkalosis and tetany are likely to occur.

Procedure for Treatment.

A mixture containing grs. 30 each of potassium citrate and sodium bicarbonate, with some suitable flavouring agent such as syr. aurantii, minims 40, in an ounce of water, is given by mouth at hourly or two-hourly intervals until secretion begins or until it begins to increase. At this point the previously acid urine is usually definitely alkaline. In cases of coma a 3 per cent. solution of the mixture is given per rectum, or a drachm to the pint intravenously, and repeated until either diuresis is established or consciousness is regained, when oral administration is to be preferred. A light diet can be given throughout when desired, and no extra fluid need be given, but the minimum should be not less than three pints a day. The total quantity of fluid intake should be kept reasonably constant from day to day. The number of doses and the total amount of alkali required to start diuresis of course varies in each case, but it is absolutely essential that alkalies should be given continuously until diuresis begins. When the urinary output has reached 10 to 15 oz., and is seen to be still increasing, the alkalies must be reduced in amount, but *must not be withdrawn*. The total quantity of alkali given in the 24 hours may be reduced by one-third, but if this is followed by a decrease in urinary output the former dose must be resumed immediately. By thus carefully manipulating the dose it is usually possible to maintain a satisfactory diuresis. Complete withdrawn of alkali at the point at which secretion begins is sometimes followed by an anuria, and a second attempt to overcome this by means of alkalies generally demands a much larger dose than before, and this is often dangerous and frequently unsuccessful.

The essential points in the procedure are to give alkalies in increasing amounts rapidly until diuresis commences, then to reduce the dose sufficiently to maintain the flow, but not to the extent of causing a secondary decrease in the secretion. The patient requires unceasing attention and should on no account be left without expert supervision. The chief danger to be feared from overdosage is tetany, but this has not yet occurred in a case of suppression, probably because diuresis begins and the dose is reduced just before the tetany point—in quantity of plasma bicarbonate—is reached. Tetany produced by overdosage with alkalies is easily overcome by a slight reduction of the dose and by the intramuscular injection of one grain of calcium chloride in 40 minims of distilled water. The injection may be repeated two hours later if necessary. By far the greatest danger in tetany is complete withdrawal of alkalies. Chvostek's sign is generally present, and is an early and valuable warning of the approach of tetany due to over-dosage with alkalies.

The after-treatment consists in giving a dose of alkali sufficient to keep the urine definitely alkaline to litmus until the exciting cause of the suppression is overcome or removed.

CASE 1. *Albuminuria of pregnancy in labour, second pregnancy.*—The patient was a married woman aged 26. She had extreme œdema of legs, thighs, and face, and albuminuria was first noticed on Nov. 7th. She did not attend again until she was admitted in labour on Dec. 12th. On admission at 3 P.M. 2 oz. of urine were obtained by catheterisation, and contained much albumin. Labour commenced at 5 A.M. on Dec. 13th. At 2 P.M. there was no urine; the plasma bicarbonate was 0·0246, and the blood-urea 45 mg. per cent. She was given grs. 60 of alkalies two-hourly, but no urine could be obtained by catheter. At 1 P.M. on Dec. 14th the plasma bicarbonate was 0·0326, and the blood-urea 65 mg. per cent. The dose of alkalies was decreased to grs. 60 six-hourly. At 4 P.M. on Dec. 14th diuresis began. The urine had a hydrogen-ion concentration of 6 and contained 6 parts per 1000 of albumin. A full-term child was born at 7 P.M. on Dec. 14th, three hours after the diuresis had begun.

CASE 2A. *Parenchymatous nephritis.*—The case was that of a child of 3. There was a 15 months' history of general anasarca, with marked ascites, and the child had passed very little urine for three days before admission. He then passed 1 oz. a day for the next two days. The urine was very acid, loaded with albumin and casts, but contained no blood. He was given grs. 690 of alkali in 48 hours and the urine increased to 14 oz. and became alkaline to litmus. After further grs. 480, the volume increased to 70 oz. He was discharged with no œdema and with his urine free from albumin and casts.

(*b*) He was readmitted one year later with identical symptoms, having passed scarcely any urine for two days. In the first 24 hours after admission he passed 3 oz. of very acid urine, loaded with albumin and many casts, but no blood. After grs. 560 of alkali, given during the next 24 hours, he passed 8 oz. After further grs. 480 the output increased to 22 oz. The dose was maintained at grs. 480 per diem, and the volume of urine gradually increased to 40 oz. a day. He was discharged without œdema and free from albumin and casts.

CASE 3. *Chronic pyelonephritis.*—The patient was a girl of 16. She had had puffiness of the eyes and headaches for four years. On admission she was unconscious and there was some twitching of the extremities. The urine was acid, contained albumin, a little blood, and many coliform bacilli. The face and legs were œdematous. The urinary volume averaged 20 oz. for some days and then decreased and finally none at all was passed for three days. At this point the plasma bicarbonate was 0·026 mg. per cent., and the blood-urea was five times normal. She was given grs. 360 of alkali by the mouth, and this was followed by secretion of urine and return of consciousness. Thereafter an adequate diuresis was maintained on a daily dose of grs. 200 and all the symptoms cleared up. Eighteen months later she was still attending the out-patient department for observation.

CASE 4. *Sanocrysin poisoning.*—This was a case of infective endocarditis in a girl aged 17½, in which subsidence of the temperature and reduction in the size of the spleen had followed a small dose of sanocrysin on several occasions. Three days after a somewhat larger dose than usual the urine rapidly decreased in amount and contained albumin. For three days there was complete anuria with partial coma and uræmic twitchings of the extremities. At this point the plasma bicarbonate was 0·022 molar, and the blood-urea was between four and five times the normal. She was already having grs. 110 of alkali a day and this was increased to grs. 60 hourly. At the end of 24 hours, when she had had grs. 1440, she had passed 20 oz. of urine. The dose was then reduced to grs. 480 a day and the secretion of urine continued in adequate amounts. She became fully conscious and all signs of uræmia disappeared. Later the dose was still further

reduced and she was sent home with her renal condition recovered. I am indebted to Dr. G. Marshall for permission to publish this case.

CASE 5. *Chronic parenchymatous nephritis.*—The patient was a boy of 4. There was a three months' history of generalised œdema and ascites and he had been passing very little urine for some days. He was very drowsy and his urinary output was only 5 oz. in the first 24 hours after admission. It was acid, solid with albumin, and contained many casts and a little blood. The plasma bicarbonate was 0·0163 molar. After he had had grs. 120 of alkali, he passed 8 oz. of urine and after grs. 240 he passed 18½ oz. and the bicarbonate rose to 0·024 molar. After grs. 1380 he passed 26 oz. of urine, with a hydrogen-ion concentration of 8·3.

CASE 6. *Chronic pyelonephritis.*—The patient, a woman, aged 32, was admitted with headache, vomiting, purpura, uræmic twitchings, and almost complete suppression of urine. The blood-urea was 620 mg. per cent. She was given grs. 720 of alkali and passed 12 oz. of urine, which was neutral to litmus. The dose was maintained at grs. 720 for another 24 hours, and 32 oz of urine were passed. The hydrogen-ion concentration was 7·2 and the urine contained 1 part per 1000 of albumin. The plasma bicarbonate was 0·033 molar and the blood-urea 550 mg. per cent. It was decided to continue the dosage at grs. 480 per diem, and later she passed 46 oz. of urine in the 24 hours.

CASE 7. *Acute nephritis 15 days after tonsillitis.*—The patient was a boy aged 8. The average output of urine was 2 oz. a day for four days. The blood-urea was 320 mg. per 100 c.cm. He was given grs. 180 of alkali a day by mouth. After three days he passed 10 oz. of urine. The following day diuresis set in and he passed 36 oz. The plasma bicarbonate was 0·0319 molar. On the next day he passed 42 oz. of urine.

In addition to the seven cases described 17 others have been treated similarly, and in a total of 24 cases the method only once failed to establish diuresis.

In this case, a man of 58, there had been complete anuria for four days after injections of salvarsan for tabes dorsalis. Alkalies in drachm doses were given by mouth two-hourly. After a total of grs. 1200 had been given, 7 oz. of neutral urine, containing albumin and a few casts, was passed. Twelve hours later he died suddenly. Post mortem there was marked aortitis and slight degeneration of the renal tubules. Even in this case the urinary secretion was presumably commencing.

In at least 12 of these cases it is a fair assumption that the production of diuresis was very largely the means of saving life.

Table showing the Duration of Suppression and the Plasma Bicarbonate.

Case.	Age in years.	Diagnosis.	Duration of suppression.	Plasma $NaHCO_3$ molar concent.
A	20	Chronic parench. nephritis.	24 hours	0·0235
B	42	Acute nephritis and pregnancy.	3 days	0·0185
C	17½	Sanocrysin poisoning.	3 ,,	0·022
D	4	Acute on chronic parench. nephritis	3–4 ,,	0·0163
E	28	Heart failure	2 ,,	0·0258
F	36	Cellulitis of arm. Old nephritis.	24 hours	0·0267
G	58	Salvarsan poisoning	4 days	0·0265
H	26	Pre-eclampsia	2 ,,	0·0246
I	16	Chronic pyelonephritis.	3 ,,	0·026

Significance of Plasma Bicarbonate.

The plasma bicarbonate was definitely below normal in every case where it was estimated. As it increased to a normal level more and more urine was passed. A low plasma bicarbonate does not of itself cause oliguria or anuria, as it is quite common in cases of heart failure, cirrhosis of the liver, Addison's anæmia, and many other diseases with a normal output of urine. There is evidence that an abnormally high plasma bicarbonate leads to renal damage, oliguria, and anuria. Brown and his co-workers [2] have reported evidences of toxic nephritis associated with the alkalosis of duodenal obstruction. Fischer [3] and Stokes (unpublished) have produced nephritis in animals by the intravenous injection of alkaline salts, and the writer [1] has described two cases of parenchymatous nephritis treated with alkalies which further illustrate this point. It would seem, therefore, that anuria may be associated with either an abnormally high or an abnormally low plasma bicarbonate. Indeed, it seems doubtful whether anuria can develop or persist when the bicarbonate is normal. In order to prevent anuria, therefore, it is necessary to ensure that the plasma bicarbonate remains normal. Anuria associated with alkalosis is unlikely to be met with except in cases of high intestinal obstruction, persistent vomiting, or over-dosage with alkalies. In such cases the appropriate treatment—in addition to the removal of the cause—consists in giving ammonium chloride by mouth or by rectum in doses sufficient to reduce the plasma bicarbonate to a normal level. Experience has shown [1] that it is unsafe to do this without facilities for the necessary estimations, as over-dosage may lead to a secondary and more persistent anuria. Acute nephritis constitutes an important exception, for in this disorder all the functions of the kidney are for a time in abeyance. Even if the blood bicarbonate is below normal large doses of alkalies may only accumulate in the blood and cause alkalosis. In these cases alkalies should only be given after other measures have proved ineffective, and only then with caution, and, if possible, with blood controls. In none of our cases was blood present in the urine in more than microscopical amounts.

Prevention of Suppression and Anuria.

A decrease of the plasma bicarbonate has been found by the writer, by Cullen, Austin, Kornblum, and Robinson,[4] and by others after prolonged exercise in normal persons, after comparatively mild exercise in nephritics, and after general anæsthesia by chloroform, ether, and nitrous oxide. Gamble, Ross, and Tisdall [5] describe a lowered plasma bicarbonate in starvation. Anuria is especially liable to occur in persons in whom the kidneys are already damaged. It is in such cases that the supervention of any of the above conditions is therefore likely to result in suppression of urine and that alkalies can be used effectively to prevent this complication. The subjects of chronic nephritis of all types, however mild, and persons with damaged kidneys from any cause are bad operative risks from the point of view both of the anæsthetic and of post-operative shock (also associated with an acidosis). The danger consists very largely in post-operative depression of kidney function resulting in suppression of urine, which may or may not terminate fatally. Any remedy, therefore, which will tide them over the emergency will be of considerable value. It is almost impossible to obtain figures which show definitely that the prophylactic use of alkalies effectively prevents suppression, because it is never certain that in a given case such a complication must inevitably ensue. Nevertheless, experience has shown that in a large number of patients with renal damage, mostly chronic nephritis, in whom the plasma bicarbonate was maintained at a normal level by adequate doses of alkalies, the development of infections and inflammatory lesions and the use of general anæsthetics was not attended by any exacerbation of the kidney lesion which could be detected, or by oliguria or anuria, any of which might reasonably have been anticipated.

Experimental evidence is more easily obtained and points to the same conclusion. Kingo Goto [6] showed that uranium nephritis in dogs was much less severe if sodium bicarbonate had previously been given by mouth. MacNider [7] found that dogs with a naturally acquired chronic nephritis developed anuria after being anæsthetised with Grehant's anæsthetic, the principal ingredient of which is chloroform. These dogs did not have an initial acidosis (low bicarbonate), but developed this during the anæsthesia. The anuria was shown to be constantly associated with swelling, vacuolation, and necrosis of the convoluted tubular epithelium, and with the accumulation of fat in the ascending limbs of Henle's loops—the amount of fatty deposition showing a quantitative relationship to the degree of acid intoxication. In a further paper [8] he showed that the prophylactic administration of alkalies

protected the kidneys of these naturally nephropathic dogs against the anæsthetic, so that anuria did not occur. Furthermore, when alkalies were not given and anuria followed the anæsthesia the intravenous administration of caffein citrate, theobromine sodium salicylate, pituitrin, urea, and glucose, failed to induce diuresis. When alkalies had been given before the anæsthetic, although anuria occurred, these same substances produced an increased flow of urine. These experiments suggest that diuretics are not effective unless the plasma bicarbonate is first at a normal level. This would explain their comparative failure in the treatment of chronic nephritis with œdema, a condition in which the plasma bicarbonate is often below normal and in which alkalies are of considerable value.[1 9] MacNider also showed that a 0·9 per cent. solution of sodium chloride is not equally effective in preventing anuria in dogs in similar experiments. Andrews[10] found that the amount of water that it was possible for a dog to excrete after the intravenous injection of glucose was directly proportional to the alkalinity of the blood (plasma bicarbonate). If the carbon dioxide combining power of the blood was below a "critical point" of 45 vols. per cent. diuresis did not occur, as all the water in the body was "fixed" or held relatively firmly by the colloids. Above this level water is more loosely held by the colloids and diuresis occurs. He noted also that above the "critical point"—that is, at the alkaline end of the scale—less water was excreted. These results agree remarkably with those obtained by the writer,[9] who showed that, in some cases of chronic parenchymatous nephritis, diuresis and subsidence of œdema occurred under treatment with large doses of alkalies when the plasma bicarbonate reaches a "critical level." The diminished output of urine when the plasma bicarbonate rises above the normal has also been found by the writer in cases of chronic nephritis and is discussed elsewhere.[1] Liotta[11] found that prolonged administration of sodium salicylate in rabbits caused marked changes in the kidneys, but that when sodium bicarbonate was added to the sodium salicylate these changes were not found. Finally, Weiss[12] showed that the administration of alkalies is by far the most successful method of combating mercuric chloride poisoning in man. The toxic action on the kidneys is largely prevented, so that acute nephritis and suppression of urine are less likely to develop or to prove fatal. There would therefore seem to be abundant evidence, both clinical and experimental, that kidney damage and anuria can be prevented by the prophylactic use of alkalies under a variety of conditions.

Dosage.

In the prevention of anuria by the administration of alkalies a preliminary estimation of the plasma bicarbonate should always be made. In this way only can effective protection be secured. No doubt the routine use of alkalies in these circumstances in amounts sufficient to render the urine alkaline to litmus will prove sufficient in a number of cases, and, given in this way with care, probably little harm would result. Failures, however, are certain with such a haphazard and inadequate procedure. Apart from drawing attention to the possible dangers of empirical dosage, no definite rules can be given, as the amount of alkali needed must be assessed from time to time by the blood findings.

References.

1. Osman, A. A.: Guy's Hosp. Rep., 1927, lxxvii., 386.
2. Brown, G. E., Eusterman, G. B., Hartman, H. R., and Rowntree, L. G.: Arch. Int. Med., 1923, xxxii., 425.
3. Fischer, M. H.: Œdema and Nephritis, New York, 1921.
4. Cullen, G. E., Austin, J. H., Kornblum, K., and Robinson, H. W.: Jour. Biol. Chem., 1923, lvi., 625.
5. Gamble, Ross, and Tisdall: Jour. Biol. Chem., 1923, lvii., 633.
6. Goto Kingo: Jour. Exper. Med., 1917, xxv., 693.
7. MacNider, W. de B.: Ibid., 1918, xxviii., 501.
8. Ibid.
9. Osman, A. A.: Guy's Hosp. Rep., 1926, lxxvi., 412.
10. Andrews, Edmund: Arch. Int. Med., 1926, xxxvii., 821.
11. Liotta, D.: Rif. Med., 1927, xlii., 985.
12. Weiss, H. B.: Arch. Int. Med., 1924, xxxiii., 224.

NOTE ON THE ACTION OF ŒSTRIN ON THE ISOLATED UTERUS

SENSITISED WITH PITUITARY EXTRACT.

By ELEANOR M. SCARBOROUGH, M.B., M.Sc. Lond.,

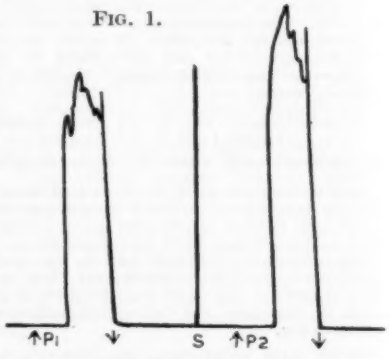
READER IN PHARMACOLOGY IN THE UNIVERSITY OF LONDON.

(*From the Pharmacological Laboratory, London (R.F.H.) School of Medicine for Women.*)

In a recent paper in THE LANCET Bourne and Burn[1] have described the synergistic action of œstrin and pituitary extract upon the isolated uterus. This synergism is demonstrated by the markedly augmented contraction which pituitary extract evokes when used in the presence of a small dose of water-soluble œstrin.

A series of experiments, somewhat similar but with the sequence of application of drugs reversed, has been in progress here during the last few months. Doses of water-soluble œstrin, large enough to produce a definite uterine contraction have been used, and the contraction evoked by a constant dose of œstrin recorded before and after sensitisation of the uterus with pituitary extract. The results of this series of experiments confirm the findings of Bourne and Burn.

FIG. 1.



Showing increased sensitiveness of the uterus to pituitary extract. At P1 and P2 0·02 units were introduced, at S the drum was stopped and the uterus remained suspended for half an hour in saline +0·01 units.

The water-soluble œstrin used throughout has been prepared by the method of Laqueur, Hart, and de Jongh.[2] The preparations produced characteristic vaginal smear reactions in the ovariectomised rat, as described by Coward and Burn,[3] but no standardisation of the preparations has been attempted. The solutions grew mould on keeping and gradually lost their activity. The dose used throughout was that which was found by trial to be the smallest dose producing a definite uterine contraction.

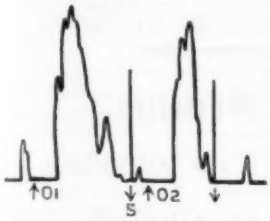
Method.—The uterine horn of the virgin guinea-pig (10 to 12 weeks old) was suspended in 100 c.cm. of Magnus's solution, through which a constant stream of oxygen was passed. The temperature was maintained evenly at 38° C. Drugs under consideration were added to the saline, which was changed after each drug action without altering the other conditions of the experiment. Spontaneous uterine contractions, when present, were almost or completely eliminated by adjusting the weight of the writing lever.

Results.—Control experiments showed (*a*) that the sensitiveness of the uterus to pituitary extract is increased after it has been suspended for half an hour in 100 c.cm. saline containing 0·01 unit of pituitary extract (Fig. 1); (*b*) that the contraction produced by a second dose of œstrin is either similar to, or somewhat smaller than, the contraction caused by the first dose, when the uterus is suspended in saline during an interval of half an hour between the two doses (Fig. 2).

In 30 experiments a contraction was recorded in response to a dose of œstrin. The œstrin was then removed and the uterus sensitised with pituitary extract, as in the control experiments. After washing out the pituitary extract the contraction produced by

a second equal dose of œstrin was recorded and compared with the first. Sixteen of these experiments showed an increase in the œstrin contraction after sensitisation (Fig. 3). Eight experiments gave a negative result, the second contraction being smaller than the first. The remaining six experiments gave no characteristic result as large spontaneous uterine contractions were exhibited and the contractions evoked by drugs were all of equal and presumably maximal size; it was thus impossible to demonstrate an increase of sensitiveness with pituitary extract. In these cases it is probable that the uterus was removed from the animal during œstrus, when, according to Burn and Dale,[4] the muscle is excitable and prone to acquire a large automatic rhythm.

FIG. 2.



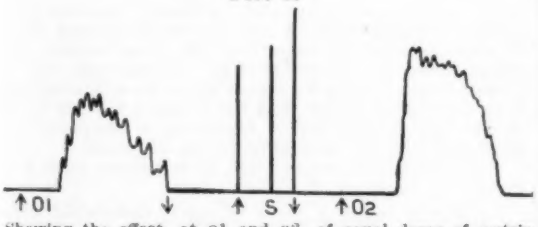
Showing the effect, at o1 and o2, of equal doses of œstrin. At s the drum was stopped and the uterus remained suspended for half an hour in saline between the two doses.

Discussion.

These results indicate that the isolated uterus, sensitised with pituitary extract, is, under certain conditions, rendered more sensitive to the action of œstrin also. Discrepancies due to the varying original sensitiveness of uterine muscle may explain the high proportion of negative results. The phase of the œstral cycle of the animals from which uteri was obtained has not, as yet, been taken into account in these experiments.

The increase in sensitiveness of the uterus to œstrin after pituitary extract is comparable with the synergistic action of the two drugs when used together. Bourne and Burn suggest that the synergistic action of œstrin is an important factor in determining the onset of parturition by enhancing the sensitiveness of the uterus to pituitary extract. These workers regard their hypothesis as an alternative to that of Dixon and Marshall,[5] who describe an increased output of secretion from the posterior lobe of the pituitary gland, occurring in response to an interstitial ovarian

FIG. 3.



Showing the effect, at o1 and o2, of equal doses of œstrin. Between ↑ s ↓ the uterus remained suspended for half an hour in saline + 0·01 units of pituitary extract.

hormone, and rendering the uterus supersensitive and highly responsive to other forms of stimulation at the close of pregnancy. These two conditions may, however, be considered as coexistent rather than alternative, and the production of a maximal uterine sensitiveness at the onset of parturition may be regarded as the combined rôle of the two ovarian hormones, the development of an augmented response to pituitary secretion producing, concurrently, an augmented response to the presence of œstrin.

References.

1. Bourne, A. W., and Burn, J. H.: THE LANCET, 1928, ii., 1020.
2. Laqueur, Ernst, Hart, P. C., and de Jongh, S. E.: THE LANCET, 1927, i., 1126.
3. Coward, Katharine H., and Burn, J. H.: Jour. Phys., 1927, lxiii., 270.
4. Burn, J. H., and Dale, H. H.: Reports on Biological Standards, I. (Medical Research Council), London, 1922.
5. Dixon, W. E., and Marshall, F. R.: Jour. Phys., 1924, lix., 276.

Clinical and Laboratory Notes.

A NOTE ON THE TREATMENT OF RICKETS WITH IRRADIATED ERGOSTEROL AND ULTRA-VIOLET LIGHT.

BY ELLA FERRIER PRINGLE, M.D., M.R.C.P. EDIN., D.P.H. GLASG.,
LATE ASSISTANT MEDICAL OFFICER (MATERNITY AND INFANT WELFARE), BURGH OF PAISLEY.

IN view of the fact that, in Paisley, we experienced considerable difficulty in inducing mothers to bring their rachitic children regularly three days a week for ultra-violet light treatment, we decided to try a certain number of these children with radiostol (irradiated ergosterol). Accordingly, we selected 42 cases of early, medium, and late rickets, and each child was given one tablet of radiostol daily. The results of treatment were, in most instances, very good indeed. We found that the early and medium cases showed the greatest improvement in the shortest time. Children from 1 year to 14 months old who had not erupted any teeth, and who were neither attempting to walk nor stand, after four weeks' treatment walked unaided, and dentition was well established. Each succeeding month of treatment showed steady improvement, particularly in these two directions. In some instances the general condition of the children improved to some extent but not nearly so markedly as the local condition. The effects of ultra-violet light were in noticeable contrast to the changes seen with radiostol, for after a course of light the most striking improvement was that seen in the patients' general condition. After a short course of treatment the children lost their restlessness, slept well, became happy and contented, and did not cry when handled. Advanced cases of rickets with genu valgum or varum improved slowly under treatment with ultra-violet light.

The conclusions one may draw from the above are as follows: 1. Radiostol is a valuable agent in the treatment of rickets in young children. Though it cannot take the place of ultra-violet light therapy, it is undoubtedly of great service for children who are unable to attend the sunlight clinic regularly. The general condition of such children does not show the same rate of improvement as does the local condition. 2. Rachitic children respond rapidly to treatment by ultra-violet light rays, as is evidenced by the improvement which takes place in their general condition, even after a short course. Rachitic deformities definitely improve under such treatment, though a prolonged course may be necessary to effect a cure.

Edinburgh.

A CASE OF INFECTION OF THE MENINGES BY *BACILLUS LACTIS AEROGENES.*

BY A. DEANE, M.D. ABERD.,
SENIOR PHYSICIAN TO THE PRINCESS ALICE MEMORIAL HOSPITAL, EASTBOURNE;
AND
GEOFFREY SHERA, M.D. CAMB.,
CLINICAL PATHOLOGIST TO THE HOSPITAL.

IT has been stated by Dr. Russell Brain and Dr. F. C. O. Valentine [1] that "general infections, with meningeal involvement, by bacilli of the Friedländer type are occasionally met with, but a mucoid bacillus of these cultural characters (referring to a type of *B. mucosus capsulatus* which formed only acid and no gas in certain sugar media) has not previously been isolated in these laboratories (London Hospital), either from the blood or the spinal fluid." We have therefore thought it worth while to report a case of

[1] THE LANCET, 1928, i., 855.

infection of the meninges by an allied capsulated mucoid bacillus—namely, *Bacillus lactis aerogenes*—in this instance secondary to suppurative cholecystitis.

The patient, Mrs. A., aged 71, was admitted to hospital on May 11th on account of persistent vomiting and pyrexia. A week previously she had had a rigor, with a temperature of 102° F. Since then she had been vomiting frequently and was very constipated.

On admission her temperature was 101°, pulse-rate 132, and respiration-rate 40. She seemed lethargic and very tired, and complained of persistent vomiting and feeling very weak. She was very fat; there was no abdominal pain, tenderness, or rigidity, nor any palpable tumour. There were moist râles at both bases. The next day she was in a state of low delirium, and the following day at noon she had a rigor (temperature 101°) and became deeply comatose and lay curled up on her side in bed with her head forward. Her respirations remained rapid and the pulse-rate 100 to 120; moist râles were more numerous over the chest. Blood-stained pus began to flow from the nose and she died in the afternoon.

Post-mortem examination (G. S.) showed obvious meningitis with green pus over the vertex beneath the pia-arachnoid, *which was raised up in blebs by bacterial gas formation.* The base of the brain and fourth ventricle were also purulent. The middle ear and ethmoidal cells were clear. The nose showed some localised purulent discharge of a chocolate colour. The skull was of abnormal thickness and density. The muscular tissue of the heart was very pale and flabby. There was thickening and incompetence of the mitral valve, and the aorta showed a moderate degree of atheroma. The lungs were congested at the bases. The liver was large, soft, and fatty in texture. The gall-bladder showed one small faceted stone lying in a bag of creamy pus. The spleen was enlarged, diffluent, and septic in type. The kidneys were small and pale; some chronic interstitial changes were evident. The capsule, however, peeled easily.

The cause of death was held to be septic meningitis due (as subsequently ascertained) to infection via the blood stream by *Bacillus lactis aerogenes* and secondary to suppurative cholecystitis. Films from meningeal pus and gall-bladder pus showed many large Gram-negative capsulated bacilli. Some of the forms were very long. The cultural reactions are contrasted in the following table with those of two other bacilli—namely, Brain and Valentine's strain of *B. mucosus capsulatus* and Stitt's description [2] of *B. mucosus capsulatus*.

—	*B. lactis aerogenes.*	Brain and Valentine's organisms.	Stitt's organism.
Type of growth on McConkey's medium	Pink, profuse, and mucoid.		Colourless, profuse, and mucoid.
	Negative.		
Gram-staining			
Filaments	Present in films.	?	Present in films.
	Non-motile.		
Motility			
Gelatin	Not liquefied.		
Serum	Not liquefied.	?	Not liquefied.
Indol formation	Negative.	?	Optional (±).
Voges-Proskauer test	Positive.	?	" "
Animal pathogenicity		Positive.	
Milk	Acid and clot. in 24 hours.	Acid only.	Acid and clot.
Dextrose	Acid and gas.	" "	Acid and gas.
Lactose	" "	" "	No change.
Mannite	" "	" "	Acid and gas.
Salicin	" "	?	?
Saccharose	" "	?	Acid and gas.
Maltose	" "	?	" "
Dulcite	No change.		?
Inulin	?	No change.	?

? = not mentioned.

It will thus be seen that these three strains of bacilli differ in certain interesting particulars. Whereas our strain of *B. lactis aerogenes* agrees absolutely with Stitt's, and also Castellani's [3] description of that germ, Brain and Valentine's strain differs from Stitt's description of *B. mucosus capsulatus* in several striking points. First, it does not ferment lactose, and secondly, no gas is formed, nor is milk clotted. These differences are certainly more academic than clinical inasmuch as the bacilli can cause septicæmia and meningitis and are obviously closely allied bacteriologically. The clinical obscurity and insidiousness of the meningeal invasion were a feature of our case.

Unlike bacilli of the Friedländer type, *B. lactis aerogenes* produces gas in lactose, but here again we have a closely allied organism. The justification for publishing this case was the rarity of meningeal infection by *B. lactis aerogenes* group organisms as pointed out by Brain and Valentine in their recent paper, as opposed to the not uncommon type of meningitis associated with Friedländer's bacillus.

[2] Stitt, E. R.: Practical Bacteriology. Blood Work and Animal Parasitology. London: H. K. Lewis. 1927.

[3] Hewlett, E. Tanner: Manual of Bacteriology (Castellani's Classification of the Coliform Bacilli). London: J. and A. Churchill. 1921.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ANÆSTHETICS.

AT a meeting of this Section on Dec. 7th, Dr. ASHLEY DALY, the President, in the chair, a paper on

PRELIMINARY MEDICATION IN ANÆSTHETICS

was read by Dr. STANLEY ROWBOTHAM.

For the nervous patient, he said, the preliminaries to the actual operation—the journey to the theatre and the taking of the anæsthetic—were fraught with fear and aversion, and he considered that everything possible should be done, within the limits of safety, to blunt sensibility so that the unsettling nervousness would be much less real. The customary gr. ¼ of morphine was not enough. The wind could be a good deal tempered to the shorn lamb by the use of ether per rectum, but the addition of hyoscine he had found to be a distinct advantage. Dr. Rowbotham had been trying to find a way of protecting the nervous system and causing in the patient such a profound sleep before the actual anæsthetisation and while he was still in bed that it would be impossible to arouse him out of it, so that not only would apprehension be abolished but true shock would be diminished. This it was nearly always possible to accomplish with paraldehyde alone, or with hypodermic injections of morphine, heroin, or hyoscine. During the investigation it became clearly evident that combinations of drugs acted more powerfully and for longer periods than did any separate drug of such combination used alone. It was believed by some that this was because the drugs acted on different cells. Chloroform was so greatly reinforced in its action when used in combination with other drugs that the speaker did not think it was safe to employ it following a complete preliminary paraldehyde and morphine narcosis.

For determining dosage Dr. Rowbotham gave four groups of cases:—

1. Children under 7 years of age; under-sized older children; very feeble young subjects; those with low blood pressure; those who had had a heavy blood loss, and who had had a rise of temperature for some days.
2. Normal adults, and children over 7.
3. Very nervous patients; alcoholics; athletes over 25 years of age.
4. Cases of Graves's disease.

He propounded an elaborate table of dosages for each class. In Graves's disease, he said, it was very difficult to narcotise the patients. As operations upon them were nearly always done under local anæsthesia, it was very important to have them absolutely quiet and asleep. For them he used progressive doses, stopping short when the result had been attained. For some days before operation he tested the reaction of the patient to the drugs to be employed. The action of these drugs was more profound in patients with a low blood pressure, those who had had severe hæmorrhage, who had suffered shock, or long-standing sepsis, hence the quantity used must be less.

After giving a detailed account of the actual technique used, Dr. Rowbotham said he did not think paraldehyde alone was contra-indicated for abdominal

operations. The most important contra-indication to this preliminary medication was the necessity of using chloroform as the general anæsthetic. The method he was now advocating had achieved its object very successfully; indeed, in some cases, patients on awaking to full consciousness long after the operation, asked quite innocently when it was likely to take place.

Discussion.

Dr. JOSEPH BLOMFIELD agreed that it was very important that the anæsthetist should make the patient as comfortable and as free from after-effects as Dr. Rowbotham seemed to do with paraldehyde. Not much detail had been given, however, concerning the nature of the cases in which he brought it about. The chief point was the long sleep which ensued after the operation. From the patient's point of view this was doubtless desirable, but there were objections to it. It meant, for instance, that for hours the patient was breathing so feebly that the lungs were inefficiently distended. From this pulmonary congestion serious trouble might arise. And in operations involving the air passages there was the question of blood trickling into places where it was not desired in an insensitive patient. If Dr. Rowbotham would show that he obviated these dangers the method had much to commend it. Avertin seemed to be, in many respects, at least equal to paraldehyde, in some ways even superior. With avertin, however, some anæsthetic had to be used in order to be safe.

Dr. J. W. MAGILL said he had had some marvellously good results with paraldehyde in his private practice. He did not use the method in every case, but found it particularly valuable for nervous children. Much, he thought, depended on the type of nurse on whom one relied to give the rectal injection. It should be warmed before being given; and if olive oil was used it was unnecessary to employ chloretone. Dr. Rowbotham's procedure had the disadvantage that it required a visit to the patient on the previous evening. The method was contra-indicated in cases associated with much sputum, such as bronchiectasis, for such a patient should be active immediately after the operation so as to be able to empty his cavities.

Mr. F. T. EVANS asked whether Dr. Rowbotham got cases of extreme restlessness after using paraldehyde. He had heard of one patient being practically maniacal for some time after the operation, even gr. ¼ morphine failing to quieten him.

Dr. Z. MENNELL expressed a preference for giving an anæsthetic by the upper air passages rather than by rectal injection. He did not think the contention that paraldehyde was quite safe could be maintained. Before the war it had been given intravenously, but two deaths in quick succession had checked that method. Some people had an idiosyncrasy towards the drug, and when once a dose had been given per rectum it was practically irrecoverable. It could not be good for chest operations or for cases in which there was liable to be some hidden hæmorrhage; nor yet for tonsil and adenoid cases, for the children were apt to lie asleep while blood was continually trickling into the stomach. A further class of cases in which the method should not be used were those having a high intracranial pressure. The quiet and comparative absence of anxiety on the part of the patient could surely be equally ensured by means of twilight sleep, whose intensity could be modified at will. Some rectums were sure to suffer from proctitis after the use of paraldehyde.

Dr. CECIL HUGHES said he had not had experience of Dr. Rowbotham's method, but at present there was a tendency to dispense with morphia, as many surgeons considered that patients were not so well after it. He agreed with Dr. Mennell about the danger of a patient having an idiosyncrasy concerning paraldehyde.

Dr. HUGH PHILLIPS contended that Dr. Rowbotham's method was most valuable for children, especially in orthopædic cases, which as a rule were painful. He had found it very useful during a three months' hospital trial. Doubtless it added to the work of the nursing staff, and it must be given slowly, otherwise the child might reject it. Paraldehyde, however, should admittedly only be used in selected cases.

Dr. H. A. RICHARDS thought the question at issue was: Should the feelings of the patient be considered or his safety? He had had very little experience of the method, but for nose and throat operations it seemed almost reprehensible to use it. If there were a throat case without bleeding it might be allowable to give paraldehyde, but not when bleeding occurred. He did not feel favourably disposed towards the method.

The PRESIDENT said he did not employ even morphine before the operation, as he had found that some patients had been given it only a short time before the induction of the general anæsthesia was due. The method described should not be used in any case in which bleeding into the larynx was probable. After paraldehyde the condition of patients as they reached the operating theatre was ideal; if only they could be reawakened shortly after the operation matters would be all right. The sooner after operation the patient became conscious and active the better. Sleep could later be induced by a drug if necessary.

Dr. ROWBOTHAM, in reply, agreed it was not possible to use the paraldehyde in hospital as a routine. The timing meant more work for the nursing staff. He had not tried avertin, but he hoped to be able to do so. Most patients under the influence of paraldehyde and morphine got a lower blood pressure. The one or two cases of restlessness which had come into his experience he had attributed to his use of hyoscine. People who lost control under this drug did so also after alcohol. If paraldehyde had been given to a patient and it was found that he was intolerant of it, washing out the rectum would, he thought, recover some of it. The discovery of some persons with an idiosyncrasy towards paraldehyde should not be regarded as a serious argument against its use.

SECTION OF THERAPEUTICS.

AT a meeting of this Section on Dec. 11th the chair was taken by Prof. J. A. GUNN, the President, and a discussion on

PURINES AS DIURETICS

was opened by Prof. E. B. VERNEY. He began by reviewing the work of Bowman and said that the theory which he would adopt was practically that proposed by Bowman in 1842, except that the implicit belief of that authority in the expression of a watery fluid through the glomerular capillaries would be extended to include the explicit belief of Ludwig in the mechanical nature of this transference. It was now almost universally admitted that the function of the glomerulus was to allow the passage of a protein-free fluid having the same composition as an ultra-filtrate of the blood plasma, and that all the water of the urine is primarily eliminated at the glomerulus. To Bowman's belief, that the specific urinary constituents were actively secreted into the watery fluid flushing the lumen of the tubule, would be added Ludwig's conception that the tubule cells concentrated the glomerular filtrate by absorbing water from it. In the passage down the tubule certain useful substances were reabsorbed and others were actively secreted by the tubular cells into the filtrate. It was not known where these processes were carried out, but there was a little evidence that water was reabsorbed lower in the tubule than urea was excreted. The kidney could be regarded as made up of a large number of renal units, each consisting of a vas afferens, a glomerular capillary bed, Bowman's capsule, a vas deferens, the lumen of the tubule, a venula, and a collecting duct. The human kidney was composed of about 5000 of these units. The output of water from any renal unit could theoretically be increased (*a*) by increased elimination at the glomerulus, and (*b*) by decreased absorption from the tubule. The total elimination could also be increased by calling into use units which were not previously functioning. A. N. Richards had shown that the

glomeruli of the frog's kidney alternated in function, some opening up while others closed down. The injection of such substances as urea and caffeine into the blood stream increased the number of acting units. This large reserve of the kidney explained its diuretic response to caffeine and urea and the absence of a response when the reserve had been reduced by disease.

Glomerular Diuretics.

The amount of filtrate produced by a single glomerulus could be increased by increasing the filtrate pressure and by increasing the surface or permeability or both. The effective filtrate pressure was the difference between the lateral pressure in the glomerular capillaries and the osmotic pressure of the plasma proteins, and either of these could be varied. Richards had also shown that the capillary loops in any one glomerulus of the frog's kidney were subject to changes in patency, so that the filtration surface might vary extensively. The presence in the blood of urea or glucose, therefore, increased not only the number of active glomeruli, but also the number of active capillary loops in each glomerulus. It was impossible at present to determine the rôles played respectively by the various factors.

W. von Schroeder in 1886, and Phillips and Rose Bradford in 1887, had studied the xanthin bodies, and the former had shown that caffeine usually had no diuretic effect in rabbits under the influence of morphia, but that it acted strongly when chloral was used. He had attributed this result to a stimulation of the vaso-constrictor centre by morphia. If one kidney was denervated under morphia caffeine caused a marked diuresis on that side only. v. Schroeder had therefore concluded that caffeine had a double action on the kidney, an indirect central vaso-constrictor action, and a direct effect on the secreting epithelium. The latter, he had held, was only effective when the former was inhibited, as, for instance, by section of the renal nerves or injection into the blood of some substance like chloral, which protected the vaso-motor centre. The increased output of water was accompanied by an increased output of total salts. Caffeine increased the output of urine in the normal dog very slightly, if at all. v. Schroeder had rejected the glomerular filtrate hypothesis because caffeine produced diuresis when the blood pressure was considerably lowered by chloral, but this conclusion was not justified, as he had not estimated the blood flow. Phillips and Bradford had measured the change in volume of the kidney and the blood pressure in caffeine diuresis and had found that the diuretic effect was not dependent upon the vaso-dilatation or upon the blood pressure. Usually there was considerable expansion at the time of diuresis, but occasionally the diuresis was obtained without this. Changes in the kidney volume did not, however, indicate similar changes in the blood flow, but these results suggested that the rate of urine flow depended on the rate of blood flow. In 1901 Gottlieb and Magnus had obtained similar results, but had accepted v. Schroeder's hypothesis on account of the occasional occurrence of diuresis with increased kidney volume. In 1905 Loewi had concluded that the increased blood flow was the cause of the diuresis. There had been, therefore, no agreement as to whether caffeine could or could not increase the urine without a concomitant increase in blood flow. Richards and Plant in 1915 had shown definitely that caffeine produced increased elimination despite a constant blood flow, and recently Cushny and Lambie had found that caffeine diuresis began before and lasted long after the acceleration of blood flow. They thought that it caused diuresis by reducing the resistance of the glomerular capsule to filtration. It would be premature to deny that the diuretic effect was largely due to an increase in the rate of glomerular filtration arising either from an increase in the capillary pressure, or from an increase in the surface area, or from both. These factors might change without any alteration in the blood flow. The changes in composition of the urine during caffeine diuresis pointed to a glomerular rather than to a tubular mode of action: there was an increased nitrogen and chloride output at the height of the diuresis, varying with the percentage amount present in the urine before the administration of the drug. There was some evidence that caffeine was ineffective in the presence of a glomerular lesion, but effective when the tubular cells were disordered. The dimethyl-xanthins, theobromine, and theophyllin probably acted in the same way as caffeine. Theophyllin was the most potent of that group.

Such substances as urea and sulphates would presumably act by increasing the molecular concentration of the fluid in the tubules, but it was probable that their effect was partly glomerular in origin.

Discussion.

Dr. E. P. POULTON said he had been disappointed with the clinical action of the caffeine group. He described a case in which the glomeruli had been completely obliterated and the tubules normal, and the patient had had a blood-urea value of 500 mg. per cent., yet she had appeared well until within a few hours of her death. In another case the tubules had been degenerated and the blood-urea normal. He could not reconcile these cases with the statement that urea was excreted by the tubules.

Dr. GEORGE GRAHAM wondered whether the doses in common use were the right ones.

Dr. R. D. LAWRENCE asked whether diuresis had any effect on the renal threshold.

Dr. F. PARKES WEBER mentioned cases of pure parenchymatous nephritis, now called pure nephrosis, in which the output was greatly diminished without a rise in the blood-urea. Diuretics failed completely, and he believed that there was a mechanical blockage, the tubules being so swollen that water could not pass through.

Dr. KINGSTON BARTON recalled a case of auricular fibrillation, resulting from renal disease, in which digitalin had failed to produce diuresis and diuretin had been pressed as well. He remarked on the significance of the degree of alkalinity of the blood for diuretic action.—Dr. A. A. OSMAN said that there was good evidence, both experimental and clinical, that if the blood was either too alkaline or too acid no diuretic would produce diuresis. He suggested that morphine inhibited diuresis by virtue of its depressing effect on the respiratory centre.

The PRESIDENT pointed out that the action of drugs could only be discussed in relation to dosage, and commented on the difficulty of correlating experimental and clinical work, since the administration in the former was usually intravenous and in the latter oral. He asked whether the increased excretion of water would not lead reflexly to local vaso-dilatation. Chloral was a powerful dilator of the peripheral vessels, while morphine slightly contracted them in the rabbit.

Dr. POULTON recalled Brodie's theory that the glomerulus had merely a mechanical pumping action.

Dr. OSMAN pointed out that the diuretics would increase the flow of urine up to a certain degree of acidity or alkalinity of the blood, but that beyond that point oliguria supervened.

Dr. WEBER described pure nephrosis as a functional imitation of what happened in mercuric chloride poisoning.

The PRESIDENT pointed out that the mucous membrane of the large intestine performed an absorbing and an excretory function simultaneously; it was therefore reasonable to postulate a dual function for the kidney tubule.

Dr. BARTON said that cases of slow cirrhosis of the kidney without tubular nephritis might throw some light on urea excretion. The patients had high blood pressure and passed three or four pints daily but were able to live to old age without complaint.

Prof. VERNEY, in reply, agreed that it was impossible to correlate physiological and pathological findings, and thought that the physiologists might have to modify their outlook. Evidence against Brodie's

theory had been provided by Richards's experiment in which he had removed fluid direct from the glomerular capsule and found that it contained no protein, but chloride and glucose in approximately the same proportions as the blood plasma. He had calculated that the volume there was enough to account for the whole quantity secreted. If the rate of urine flow were increased experimentally glycosuria might be produced, presumably because the tubule cells had no time to reabsorb the sugar.

MEDICAL SOCIETY OF LONDON.

AT a meeting of this Society on Dec. 10th the President, Dr. J. WALTER CARR, in the chair, a discussion on

SACRO-ILIAC PAIN

was opened by Dr. WILFRED HARRIS, whose address will be found on p. 1230.

Mr. P. J. VERRALL dealt with the subject from the surgical aspect. In doubtful cases, he said, antero-posterior skiagrams would clinch the diagnosis. Until recently X rays were of little value as a means of diagnosis, as the joint was tortuous; even stereoscopic views often failed to clear up a doubt. He agreed with those who said that if arthritis showed in a joint skiagram it must be of advanced degree. The fact was that one had to rely almost entirely on clinical evidence to arrive at the diagnosis, the radiologist not being able to give much help. Mr. Verrall differed from those who said that all affections of this joint were very rare, though he could not go so far as one speaker in a recent discussion, who declared he had treated 1500 cases of subluxation. Conceptions in regard to sacro-iliac conditions were now on surer ground. Apart from tubercle and strains and subluxation, he agreed with Dr. W. Yeoman [1] that arthritis of the joint was not uncommon. It was supplied by all the nerves near it, and any pain in their distribution could easily be understood by thinking of it as referred. The most severe arthritis in that region was that due to gonococcal disease, which was more common than many supposed; indeed, the sacro-iliac stood high in the list of joints affected by that disease. A strain might be a starting-point of tubercle. There was considerable variation, in different persons, in the long axis of this joint and in the degree of laxity of its ligaments. The joint often became ankylosed in males, seldom in females. The ligaments of the joint took a large part of the superincumbent body-weight, and it had been found that too early weight-bearing after labour was a fertile source of trouble in the joint; so that it was not surprising that a second and better managed puerperium sometimes, as in the case of subinvolution of the uterus from the same cause, cured the trouble. Sometimes the cause of subluxation was the fall of a heavy body on the back while the patient was stooping.

In discussing the diagnosis Mr. Verrall said the symptoms were pain in the back or so-called sciatica, either of which might be due to many causes. If pain was increased by a jar it was suggestive, but this was not a reliable sign. In severe cases the gait of the patient was pathognomonic, especially when he tried to go upstairs. In ordinary arthritis of the hip the joint was stiff and painful in all positions, but the patient with sacro-iliac disability could be observed to seek a comfortable position. The neurasthenia which accompanied a severe case led to an exaggeration of the symptoms. In mild cases there was a tendency to deviate the body to the affected side, whereas in bad cases the deviation was away from the affected side. Also the early case showed considerable lordosis, but the advanced case had a flat, almost vertical lumbar spine and sacrum. Inspection would show swelling, abscess formation, and sinuses in infected cases, with wasting of the glutei and other muscles. And in sacro-iliac disease there might be tenderness of the sacro-sciatic notch. Superficial tenderness of the joint and just below it was common and must be carefully distinguished from deep tenderness. A displaced uterus in women or a chronically loaded rectum in either sex were among the causes. In association with Prof. Louise McIlroy he had investigated causes and found that uterine displacements were a less common cause and constipation a more common one than was thought 20 years ago. Compression of the ilia would press two cartilaginous surfaces together, while forcible separation of the anterior superior spines would cause pain if they were inflamed. A positive result of this test he regarded as conclusive.

With regard to treatment, if sacro-iliac subluxation was accepted as a clinical entity, reposition, followed by support, was indicated. If the upper ilium was rotated forward full flexion of legs and spine would reduce the lesion. In other cases in which judgment could be made from the extent of the lordosis—such as that following relaxation due to parturition, in which subluxation was in the reverse direction—reposition was best secured by placing the patient on his face and hyperextending the hip on the affected side, with counter-pressure exerted by the other hand on the opposite side. This reduction should be followed by the wearing of a support or broad band, stretching round the pelvis, with a pad over the affected joint, and the patient should rest in bed for a few days with a lumbar support. Most of the belts used for this condition did not reach low enough; the belt should just clear the seat of the chair when the patient was seated and should be below the great trochanter. In front the belt should encircle the pelvis and bind it firmly together, while it reached a point low enough to hold up the lower abdomen without cutting the thighs when the patient bent forward. Many cases of relaxation could be efficiently dealt with by the more or less permanent wearing of such a belt. In cases of arthritis in which no operation was called for, a belt would relieve the condition while search was made for the cause and treatment was instituted. In sacro-iliac trouble little or no benefit was obtained by local physiotherapeutic measures, such as diathermy and massage.

Operative measures would be directed towards obtaining internal fixation of the joint. Tuberculous sacro-iliac disease was so dangerous to life that severe treatment was often justified; but resection was a severe operation, and should never be undertaken for minor lesions. For the last few years he had been employing a method of grafting which he described in 1924—i.e., placing a graft from the tibia across and between the posterior superior spines, under the erector spinæ muscles, following the principle of the tie-beam to support a house in danger of falling. It had the advantage of being a simple method, and it only required 15 minutes to carry out. And in infected cases (e.g., tuberculous) the operation did not interfere with the infected area unless there was a dorsal abscess or sinus. He had been well satisfied with the results from it when cases were severe enough to require it, which admittedly was fairly seldom.

Dr. JAMES BRAILSFORD (Birmingham) showed a series of skiagrams from 3000 in his collection, to illustrate various accidents, deformities, and diseases of sacro-iliac joint. He said that many of the deformities in this region were not recognised until later in life—i.e., when more strain was put on the region, especially the joint. In some cases there was a separate centre of ossification for the fifth lumbar transverse process.

Dr. C. B. HEALD, who spoke from personal knowledge of the symptoms of sacro-iliac disability, said that an important point was the cat-like cautious way in which the sufferer went about, dreading that he might get into one of the acutely painful postures, particularly in resuming the erect posture after bending. Immediately after the acute pain had gone the legs felt large and "woolly," and there was a tingling of the hands.

[1] THE LANCET, Dec. 1st, p. 1119.

Dr. H. A. ELLIS said it was always important to examine the condition of the urine in these cases, especially as to its specific gravity. If the urine was of high concentration the pain would not be got rid of until the urine was put right. If the case was one of osteo-arthritis one could be sure of the diagnosis if the urine was of high specific gravity. In both types—high and low gravity urine—there might be an excess of uric acid.

Dr. WILFRED HARRIS, in reply, thanked Dr. Brailsford for his excellent series of skiagrams. He asked Mr. Verrall what were his views on the use of anæsthetics when doing manipulations. Some people preferred to do manipulations without giving a general anæsthetic.

Mr. VERRALL, in reply, said he thought it impossible to do manipulation of the sacro-iliac joint or spine without using a general anæsthetic. He gave a demonstration of his method of carrying it out.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A MEETING of this Society was held on Nov. 22nd, with Mr. A. L. CANDLER, the President, in the chair.

Dr. C. H. MILLER showed a man, aged 54, with splenomegaly, anæmia, and gout.

The patient gave a history of gout dating back several years, and he had lost weight recently. There was no vomiting and no loss of appetite. In September, 1928, he first noticed pain immediately after dinner, this lasted several days and then began to subside. The family history was good and the man could not remember any serious illness.

The chief points of interest in the case were (1) the general colour, (2) the tophi on the pinnæ, (3) splenomegaly, and (4) enlarged glands in the groins and elsewhere. A blood count on Sept. 20th, 1928, showed hæmoglobin, 22 per cent.; red cells, 1,910,000; and white cells, 10,400. Differential count: polymorphs, 60 per cent.; lymphocytes, 34 per cent.; large mononuclears, 5 per cent.; eosinophils, nil; and mast cells, 1 per cent.

There was slight variation, said Dr. Miller, in the size and shape of the red cells, but no nucleated cells were seen. The Wassermann reaction was negative. Four weeks after admission a further blood estimation showed a slight rise in hæmoglobin and an increase in the number of red cells to 4,060,000. The leucocytes now totalled 8400, with a differential count within normal limits. Stimulated by the results obtained with liver in a case of pernicious anæmia in the neighbouring bed, he had given it a trial here also, but with no advantage. More good seemed to be referable to chlorophyll-carrying agents and atophan.—Dr. R. V. SOLLY had found it impossible to classify the affection from the point of view of the blood picture.—Dr. T. R. WHIPHAM remarked upon the persisting low figure of the hæmoglobin in the second count and also upon the absence of any nucleated red cells as evidence of the blood regeneration which might be presumed to have taken place on comparing the two counts.

Mr. R. WAYLAND SMITH showed a woman, aged 29, suffering from superficial gangrene of the skin following a burn. Some 18 months ago she had burnt her thumb and this continued to suppurate, in spite of energetic treatment, and eventually reached a condition of dry gangrene necessitating amputation of the thumb in July of this year. Since then she had developed patches of superficial gangrene on the wrist and hand of the same side. No sugar had been detected in the urine or other cause discovered for this obstinate condition. *Staphylococcus aureus* was alone isolated from the pus and vaccines so obtained were worked up to 700 millions. Locally Mr. Wayland Smith had tried dichloramine dressings and ultra-violet rays. He invited the opinion of the meeting as to diagnosis and treatment.—Mr. NORMAN LOCK suggested the possibility of scleroderma and, all other means failing, the advisability of performing sympathectomy of the brachial artery.—The PRESIDENT suggested that the condition might be due to *B. diphtheriæ*, and remembered two somewhat similar cases where diphtheroids had been isolated.

Mr. BRENNAN DYBALL showed a skiagram of a case of anterior spina bifida in the upper dorsal region in a girl aged 15. Nothing abnormal had been noticed until one year ago when the parents remarked that she had become round-shouldered. Examination showed well-marked kyphosis with considerable rigidity in the upper dorsal and cervical regions and with a slight lateral curve convex to the left. The situation of the curve suggested that the case was not one of ordinary scoliosis and the skiagram revealed the true nature.

Dr. R. MICHELMORE read notes and showed tumour removed post mortem from a case of cystic glioma in a man aged 63. The man had first complained of pain in the abdomen, constipation, and tired feeling in September, 1927. A month later there followed left facial paresis of upper motor neuron type and the left pupil was found to be larger than the right. Shortly afterwards difficulty in gait was prominent and mental deterioration showed itself. Examined on Nov. 5th, 1928, the paresis of the face was more marked and the left arm was not raised unless he was urged to do so—there was also bilateral optic neuritis and loss of sphincteric control. The Wassermann reaction was negative. Post mortem a cyst, 3 inches in diameter, was removed from the left temporal region of the brain.

Dr. F. A. ROPER showed cases of bilateral lumbar tumour and encephalitis; Dr. MILLER showed a boy suffering from acute rheumatism; Dr. C. N. LOVELY demonstrated xanthoma multiplex; Dr. ROY CRAIG showed cases of Hodgkin's disease and amyotrophic lateral sclerosis; and Mr. WAYLAND SMITH a case of head injury.

MANCHESTER MEDICAL SOCIETY,

A MEETING of this Society was held on Nov. 7th, with Dr. R. W. MARSDEN, the President, in the chair. A paper on

Convulsions in Children

was read by Dr. C. PAGET LAPAGE, who divided the causes of convulsions into the following three classes:—

1. (*a*) Acute infections such as encephalitis, encephalitis lethargica, and meningitis. (*b*) Mechanical such as birth injury, or hæmorrhage with hemiplegia or diplegia; malformation as porencephaly, microcephaly; cerebral tumour, cortical (may be localised); cerebellar tumour, cerebral abscess, whooping-cough with hæmorrhage, injury.

2. Metabolic and toxic. Nerve endowment, normal or abnormal. (*a*) Rickets with peripheral irritation or additional metabolic upset (gastro-intestinal, bronchial, acute infection). (*b*) Tetany and spasmophilia with calcium deficiency; parathyroid deficiency (may be with rickets); (increased electrical reactions, Chvostek's sign, Trousseau's sign, crowing spasm, carpo-pedal spasm); some acute and some periodical. (*c*) Simple overfeeding, especially if rickets or tetany or nervous diathesis; worms. (*d*) Severe metabolic upsets as uræmia, hypoglycæmia, anaphylaxis, onset of acute illness, &c.

3. Epilepsy. (*a*) Idiopathic, (*b*) accidental. Hereditary endowment of unstable nervous system. Family history of neuropathic disorders. Might be called functional, but usually metabolic or toxic disorders as well. Overstrain and toxins. Nerve-cells irritated. Grand mal; petit mal. Isolated or only in first few years of life. Occasional, with congenital heart; idiopathic of infancy (Thomson); hysteria and hystero-epilepsy.

Dr. Lapage said that if convulsions were correctly placed under these headings prognosis and treatment were very much simplified. The importance of signs of spasmophilia, especially Chvostek's sign, was great, because if they were present there was considerable hope that the cause was spasmophilia and not one of the less tractable conditions. Naturally, if the case was due to spasmophilia the hope of cure was much greater, because spasmophilia was due to

some alteration of metabolism usually amenable to treatment. Continued fits in children were often due to an attack of polio-encephalitis which left an irritable area in the brain. As a result of increasing experience, he felt that more and more cases, which would formerly have been put under the class "epilepsy," should really be placed in the class "organic convulsions caused by some brain lesion." Polio-encephalitis was much commoner than was usually supposed. Attacks simulating petit mal must first of all be distinguished from pyknolepsy, a condition in which the prognosis was quite good, and in which there were very large numbers of small "absences" but never real fits; and also they must be distinguished from attacks like petit mal which occurred in cerebral lesions, especially cerebral or cerebellar tumours. Precursors of Jacksonian epilepsy might be the sudden momentary attacks which caused the child to fall down either backwards or forwards. Cerebral surgery in these cases was often disappointing, but it must always be remembered that hydatid of the brain, even in young children, was not unknown. The possibility of a specific origin must also be remembered and a Wassermann reaction taken.

In the treatment of epilepsy, Dr. Lapage emphasised the value of luminal and the need for careful supervision of diet and daily habits. He reported a case of successful control of fits by a ketonic diet.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting of this Institution on Nov. 15th Dr. C. O. STALLYBRASS read a paper on

Naturally Acquired Immunity in Human Communities.

In outlining the history of our knowledge of acquired immunity, he pointed out that deductions from laboratory experiments were not always applicable to man, owing to different portals of infection and the greater longevity among human beings. The effectiveness and the rate at which acquired immunity was lost in different diseases could be gauged by the liability to relapses and second attacks. A very high and permanent immunity was often secured in diseases caused by filterable viruses; in the bacterial diseases it tended to be less; in the protozoal and spirochætal diseases the immunity was often of a very low order—e.g., in relapsing fever and malaria. Much light had been thrown upon the rate of loss of immunity in man by the steady increase both in the numbers of lesions and of fatality in severe small-pox with the lapse of time since vaccination was performed. Infection might produce the typical clinical cases, the abortive cases, the *formes frustes*, and the subinfections. This latter term had been applied by Adami in 1899 to the passage of intestinal organisms during digestion and in inflammatory states of the intestines, into the lymph channels and the portal system. Each of these types of infection might be effective in producing immunity.

The results acquired from the use of the tests for susceptibility to toxins (Römer, Schick, Dick), and of cutaneous supersensitiveness (Zoeller, Pirquet, typhoidin), and for the presence of agglutinins (Widal, Weil-Felix) had thrown much light on the acquisition of immunity both in the individual and the herd. They indicated a much wider spread of infection or subinfection than was shown by the statistics of notified diseases. Alongside the visible epidemic of clinically diagnosed cases there was an invisible epidemic of subinfections, revealed only by bacteriological tests or the immunity reactions just described, and this invisible epidemic was, in a number of diseases, more effective in the production of herd immunity than was the visible epidemic. Dr. Stallybrass quoted examples from the typhoid, and more especially the paratyphoid infections, from typhus, from cholera, and from poliomyelitis, in all of which the *formes frustes* and the immunising subinfections occurred with greater or less invisible frequency. In poliomyelitis there was evidence that a most extensive invisible epidemic accompanied the visible outbreak and left behind it a highly immune population. In other diseases, such as small-pox and measles, the subinfections played little or no part in producing herd immunity. The converse aspect of the case was the doctrine stated by Dudley that those who had been longest exposed to an infected environment suffered least when exposed to an epidemic and those who had been least exposed suffered most.

New Inventions.

A TONSIL ECRASEUR.

THE illustration shows an ecraseur with two rings, one of which fits within the other. When the instrument is manipulated into the lumen and put into action these rings press concentrically upon the structures around the tonsil and thereby crush them. The closure is first made by slow pressure of the thumb. When the tonsil is well gripped it is continued still more slowly by the action of a screw. The flat bands of steel are quite blunt. The outer is split in order to receive the inner. There is nothing original in the instrument. It merely combines the advantages of previous ones; the handle is that of Sluder's guillotine; but any handle can be mounted to it, and Mr. T. B. Jobson uses a very similar instrument with a grip handle. The arrangement of the rings is similar to that in Fahnestock's guillotine. The knife has been replaced by a flat band as in Meding's instrument. I have adapted to the outer ring a valuable modification devised by Sir James Dundas-Grant. The ring in section is not circular but rectangular. This gives a better purchase to the posterior border of the tonsil than does a rounded margin, and many tonsils can thereby be delivered into the ring that would otherwise need dissection. The instrument has now been in use for over two years, and I can say with confidence that it enucleates the tonsils as completely and more cleanly than does any method by dissection. Moreover, it does this without any loss of blood. No sucker is needed and no sponge is used. It is not claimed that this instrument is incapable of improvement. The fact that the terminal portions with the rings are detachable makes it possible to experiment with new rings and minor modifications at a low cost. It is, however, claimed that instruments such as these will make the operation of dissection of tonsils under general anæsthesia a thing of the past except under the rarest of circumstances.

The tonsil ecraseur.

I have to thank Messrs Down Bros. of St. Thomas's-street, S.E., for their unfailing courtesy in the construction of the instrument.

T. B. LAYTON, M.B., M.S. Lond., F.R.C.S. Eng.

ANCOATS HOSPITAL.—A month ago the board of this Manchester hospital made their centenary appeal for £100,000 to enable them to add 100 beds and run additional operating theatres and to enlarge various overcrowded departments. Up to date they have received £26,000.

Reviews and Notices of Books.

ESSENTIALS OF MEDICAL DIAGNOSIS.

By Sir THOMAS HORDER, Bart., K.C.V.O., M.D., F.R.C.P., and A. E. GOW, M.D., F.R.C.P. London: Cassell and Company. 1928. Pp. 682. 16*s*.

IN this book a successful attempt is made to relay the foundation-stones of the art of diagnosis. Its outlook is consistent and the material put before the reader is admirably condensed. Few, if any, medical facts are omitted; nothing which is not a fact is included; in short, the book deals with diagnosis and not with hypotheses of disease. A notable feature in every section is the physiological epitome that precedes the clinical discussion. The preliminary survey of the central nervous system in Section I., the account of the blood in Section VII., the short description of the normal secretion of bile in Section V., and the introduction to Section VI., which deals with the urinary system, are inimitable. On the clinical side all kinds of examination are dealt with, from history-taking and the simple methods of inspection and palpation, to the more specialised technique of the electrocardiagram, radiography with lipiodol, fractional test-meals, estimation of the blood-urea, van den Bergh's tests, and so forth, these being set out not indeed in great detail but with respect to their exact bearing on diagnosis. Numerous plates, diagrams, charts, and radiograms illustrate the text. Variations in different diseases of the excreta, urine, sputum, and fæces are well described. In the section on the cardiovascular system the authors consider that the position of the apex-beat of the heart should be stated in reference to the nipple line, holding that measurement from the mid-sternal line "is of no value between one case and another, seeing that the criteria vary with age, build, and sex."

This book will appeal to students and practitioners who are anxious to base their medical knowledge upon scientific rather than upon hypothetical considerations. In it they will find a refreshing variety of reading, facts old and new, and a poise which will help them when they are confronted with a case difficult to diagnose.

GYNÆCOLOGY.

Les troubles fonctionnels de l'appareil génital de la femme. Étude physiologique, clinique et thérapeutique. By GASTON COTTE, Professeur Agrégé à la Faculté de Médecine de Lyon; Chirurgien des Hôpitaux. Paris: Masson et Cie. 1928. Pp. 570. Fr.60.

THE author is a profound disbeliever in the habit, too common among gynæcologists, of labelling as "functional" various gynæcological symptoms of obscure or unknown origin. In this book he has attempted to search out the underlying pathological conditions in such cases. He does not always succeed, but his attempt is a praiseworthy one, because he brings unsolved problems into the foreground, and voices a wholesome scorn of the frame of mind that can rest satisfied with anything less than accurate diagnosis based upon carefully observed pathological and anatomical data. The first 200 pages of the book are occupied with menstruation and its disorders. A good account of the menstrual cycle in lower mammals is followed by a description of that in human females, normal and pathological. The rôle of ovarian disease, especially sclero-cystic disease of the ovary, in the causation of polymenorrhœa or epimenorrhœa, and of metrorrhagia, is emphasised, and an excellent and comprehensive account is given of the work of continental workers. This section is particularly suggestive, for it is tempting to seek for mechanical or local uterine explanations for these disorders, and if these cannot be found, to label the menstrual abnormality as "functional" or "essential." The author does not confine himself to purely "functional" lesions; in a long section on sterility, occupying almost 100 pages, organic closure of the tubes is fully dealt with. The use of lipiodol is favoured in diagnosis, and a special method is described of guarding against reflux through the cervix during injection. A mercury manometer is used to indicate the pressure at which injection is taking place, 120–150 mm. being usually necessary in normal cases. In suitable cases implantation of the tubes into the uterus is advocated, and even implantation of the ovaries according to the method of d'Estes and Tuffier, and it is stated that these operations have already been justified by results. Sterility may be due to sclero-cystic disease of the ovaries, and may be successfully treated by resection or enucleation of the cysts. Other chapters deal with circulatory disturbances of the genital organs, their nerve-supply and nervous disturbances, dysmenorrhœa, ovarian insufficiency, disturbances following castration, and so forth.

The book is a valuable and laborious contribution to a difficult subject, to which, judging from the numerous references to the work of French and German authors, more attention has been paid on the Continent than in this country or in America.

PSYCHOLOGY.

Instinct and Personality. By A. CAMPBELL GARNETT, M.A., Litt.D., University of Adelaide. London: George Allen and Unwin, Ltd. 1928. Pp. 218. 8*s*. 6*d*.

ON the basis of the inadequacy of physical energy to explain the mental life of the organism, Dr. Garnett establishes his thesis upon the pre-eminence of mind. The views of the early part of the book are familiar to those who are conversant with the psychology of J. Stout and W. McDougall, and show that instinct and the phenomena of expectation are inexplicable in the absence of mind. Of particular interest to medicine are the chapters on Expectation, where Coué's work receives appreciative comment, and the Explanation of the Unconscious. In this chapter the Freudian conception is very thoroughly analysed. The author concludes that a *mental* unconscious does not exist, that the processes here are entirely physiological and that the phenomena giving rise to the symptoms in neurosis are better explained by suggestion and dissociation. Mr. Garnett argues that the phenomena of dissociation are entirely in favour of the unitary activity of the organism expressing itself through the mind, and that therefore without the concept of personality we possess no system of reference. Teleology is the mainspring of human activity and instincts are the agency for the expression of the total personal trend. In the body-mind relationship we see the work of mind in using physical energy as its instrument. Consciousness becomes not merely "the growing point of life, but the growing point of the universe." A thoughtful book, well worth reading.

Judgement and Reasoning in the Child. By JEAN PIAGET, Professor at the University of Geneva; International Library of Psychology and Scientific Method. London: Kegan Paul, Trench, Trübner and Co. 1928. Pp. 260. 10*s*. 6*d*.

NO one engaged in education, in mental testing, or in the treatment of the behaviour disorders of childhood can afford to ignore this book, which is a continuation of the author's earlier work, "Language and Thought of the Child." Having established the ego-centric thought processes of the child, Prof. Piaget carries out an extensive research and acute analysis of the logic used by children in facing propositions denoting causality and relationship. To describe the evolution of thought from the purely biological and sociological points of view is to risk casting in the shade half of the real process. Between the ego-centric

life of the child—the realm of pure imagination—and the period of verification lies all the difference between Freud's pleasure principle and the reality principle. The latter is truly the realm of logic. It is the shock of contact with an external world of obstinate fact that calls out in the child the need for verification. The greater part of this book is an application of the Binet-Simon tests to the problem of logical development and calls for careful study; this will be amply repaid by a new insight into the process of the child mind.

The publishers deserve gratitude for the excellent translation of this and the earlier treatise, both of which are rich additions to psychological literature.

The Philosophic Bases of Education. By ROBERT R. RUSK, M.A., B.A. Camb., Ph.D., Principal Lecturer in Education, Glasgow Teachers Training Committee. London: University of London Press. 1928. Pp. 205. 5*s*.

Mr. Rusk's object in this volume is to examine the various philosophic standpoints which have been taken up by writers on education, to demonstrate their value in themselves, and to assess their value as applied to educational theory. He indicts naturalism in psychology because it is retrospective and introduces a fatalism into mental tests which throws no light on conscience and the highest human aspirations. Pragmatism, too, fails, since it does not encourage a disinterested love of knowledge. Only in idealism can we find a satisfactory basis for educational theory and practice. It is a matter of some interest that the author finds in psycho-analysis an implicit recognition of the moral order when it lays emphasis on the mechanism of conflict in shaping behaviour. It is the notion of conflict that runs through all educational efforts. The best educational method is that which resolves conflicts between instinctive tendencies and social ends in the interest of the latter.

This book was well worth writing, and in the welter of nihilism in present-day thinking it is encouraging to find a writer who emphasises the importance of values in applied psychology.

DIFFERENTIAL-DIAGNOSTIK INNERER KRANKHEITEN.

By Prof. Dr. NORBERT ORTNER, Vorstand der II med. Klinik der Universität, Wien. Berlin and Vienna: Urban and Schwarzenberg. 1928. Pp. 827. M.30.

THIS is a first-class book, whose author claims that he has considered only those conditions the differential diagnosis of which is neglected in ordinary books. There are 73 sections, including such subjects as pneumothorax, ascites, epigastric tumours, polyuria, and Addison's disease. The chapters are rich in clinical detail, and the impression given is that of careful and experienced bedside observation. The thorough treatment of a subject can be judged from the fact that under "gastric ulcer" the following subdivisions are given: chronic gastritis, phlegmonous gastritis, hæmorrhagic erosions, hyperacidity, hypersecretion, achylia, mucous gastritis, gall-stones, appendicitis, hernia of the linea alba, femoral hernia, inguinal hernia, diaphragmatic hernia, gastric crises, duodenal ulcer, malaria, abdominal aneurysm, radiculitis, caries of spine, secondary growth in spine, spondylitis, pleurisy, pneumothorax, intestinal colic, intestinal parasites, scar of gastric ulcer, adhesive perigastritis, chronic lead poisoning, nervous gastralgia, enteroptosis, pulmonary tuberculosis, and carcinoma of stomach. In hæmorrhagic gastric erosions the pain is described as severe, and as occurring half to three-quarters of an hour after food without radiation or associated hyperæsthesia. It is stated that after one week of milk diet the symptoms and signs disappear.

The sections in which a single symptom or sign is discussed in all its bearings are excellent. For example, the differential diagnosis of obesity distinguishes between the forms due to dietetic causes, myxœdema, adrenal cortical tumour, pituitary or pineal dysfunction, the climacteric and Dercum's disease. Other symptoms are treated no less exhaustively. This volume should be of considerable use to the teacher and consultant in solving difficult cases.

CLINICAL ELECTROCARDIOGRAPHY.

Fourth edition. By Sir THOMAS LEWIS, M.D., F.R.S., D.Sc., F.R.C.P., C.B.E. London: Shaw and Sons, Ltd. 1928. Pp. 128. 8*s*. 6*d*.

IT is no longer possible for the general physician to be an expert in all departments of medicine; but it is not unreasonable to expect at any rate those at the head of their profession to be conversant with the scope and general principles of modern laboratory methods of diagnosis. Of such methods electrocardiography is one of the most technical; but as Sir Thomas Lewis says in the new edition of this book, "cases of structural heart disease are few in which an electrical examination is superfluous, and in a not inconsiderable percentage of cases the records modify, more or less profoundly, our conception of the malady that we treat." The opening chapter alone is devoted to technique, while in the remainder of the book the author deals with the normal electrocardiogram and the various modifications which it exhibits under pathological conditions. This edition includes a summary of the important recent work on the electrocardiographic findings in thrombosis of the coronary arteries. It is surprising what a fund of information has been condensed into so small a space, yet unlike many small books on technical subjects, this one is easy and fascinating to read. This is due partly to the carefully chosen collection of beautiful records, and partly to the clear thinking and exceptional descriptive powers which we are accustomed to associate with the writings of Sir Thomas Lewis. To the general physician and to all those who wish to keep abreast of the times in cardiology, this book will be invaluable; it contains the essentials of the subject in an easily assimilable form.

MECHANICS OF THE DIGESTIVE TRACT.

Second edition. By WALTER C. ALVAREZ, M.D., Associate Professor of Medicine, University of Minnesota. London: William Heinemann, Ltd. 1928. Pp. 447. 31*s*. 6*d*.

Dr. Alvarez's book first appeared in 1921 and was immediately recognised as a work of great importance by all those especially interested in the mechanics of the alimentary canal. At the time of its publication the author was working in San Francisco. He is now associated with the Mayo Foundation and acknowledges in the preface to the present edition the enhanced facilities for research which have come to him with this appointment. The medical public also benefits from these facilities, for they are now supplied with a vast amount of data collected by a man of studious and original mind who has devoted his life to the problems of intestinal movements. Dr. Alvarez has not only pursued research by unceasing experiment, but has also made a continuous study of the radiographic appearances of the living bowel; his work has thus a clinical value seldom found in the publications of purely laboratory workers. On such problems as the production of cardiospasm, congenital pyloric stenosis, megacolon, or the genesis of flatulence, his opinion will be noted with deep respect even by those who may not agree with his conclusions. The book is profusely illustrated by diagrams and photographs, including many portraits of eminent workers, both alive and dead.

The author has evidently been able to find inspiration even in the work of his opponents and it is certain that his book in its turn will provoke widespread interest and discussion.

AN ATLAS OF OPHTHALMOSCOPY.

By Dr. O. HAAB, Professor of Ophthalmology, University of Zurich. Translated and edited by W. B. BARKER, F.B.O.A. (Hons.), Lecturer in Applied Optics, College of Technology, Manchester. London: British Optical Association. 1928. Pp. 230.

THE edition of Haab's Atlas best known to English readers is the American one edited by Prof. de Schweinitz, the second edition of which was published in 1909. In the present edition the text is retranslated with some additional matter concerning self-luminous instruments and red-free screens. The plates are reprinted from the original stones. The preface is addressed to opticians—presumably with the suggestion that they should be able to distinguish between diseased and a normal fundus. Although all the plates are good, and the usefulness of some of them has been increased by the addition of illustrations of microscopical sections of eyes suffering from the diseases pictured, several typical conditions both of normal and diseased fundi are omitted—for example, typical coloboma of the choroid and different varieties of physiological discs. On the other hand, one plate illustrates a condition so rare as to be a curiosity—a bubble of air in the vitreous. It is true that to illustrate all the different conditions of the fundus that one is liable to come across in practice would need not a book but a museum. Haab's Atlas is excellent so far as it goes, but we are sure that the distinguished author would be the first to disclaim any idea that it is exhaustive.

A MANUAL OF HYGIENE AND PUBLIC HEALTH.

Second edition. By JAHAR LAL DAS, D.P.H., Officiating Assistant Director of Public Health, Bihar and Orissa. Calcutta: Butterworth and Co. (India), Ltd. 1928. Pp. 661. 6s.

THIS book has been brought up to date, increased in size by 27 pages, and reduced in price from 10s. 6d. to 6s. In its present form it gives quite remarkable value for this modest price. We are glad to note that some of the defects criticised in our review of the first edition have been removed, for instance, an attempt has been made to bring the references to bacterial food-poisoning up to date, and the term "ptomaine poisoning" has been dropped, but the author still uses the obsolete name of "B. suipestifer" in describing the bacterial causes of this disease. It is now universally accepted that the micro-organisms most definitely associated with food poisoning are *B. enteritidis* of Gaertner and *B. aertrycke*. The classification of rats is still imperfect and this is a matter of importance to all those concerned with the hygiene of Eastern countries. The book contains many illustrations, not all of equal merit, and a vast amount of clear and accurate information.

Reports and Analytical Records.

PLASMONA.

(PLASMON, LTD., 66A, FARRINGDON-STREET, LONDON, E.C.4.)

PLASMONA claims to be a blood and nerve food, and to contain the anti-anæmic principle of liver combined with iron phosphatides, cerebrosides, cephalin, protagon, &c., the latter being constituents of the central nerve system, and the vitamin factors A, B, D, and E. The anti-anæmic principle is derived from liver extract, vitamin A and B from liver substance and yeast, vitamin D from cod-liver oil extract, and vitamin E from wheat germ.

Plasmona is a pale, chocolate-coloured powder with a pleasant slightly sweet flavour.

On analysis the following results were obtained:—

Water	5·48 per cent.
Mineral matter	8·02 ,,
Protein	27·00 ,,
Sugars	34·60 ,,
Matter soluble in ether	8·38 ,,
Polysaccharides, tissue, and indeterminate matter	16·52 ,,

The mineral matter contained phosphates (P_2O_5) 0·3 per cent., and iron (Fe_2O_3) 0·35 per cent. Fifty-two per cent. of Plasmona is soluble in water and its reaction is neutral.

This is a food of a comprehensively planned character, and obviously contains all the necessary nutritional elements in a highly concentrated form. A portion of the iron and phosphorus is present in organic combination, thus aiding assimilation.

DIAMOND ALUMINIUM WARE.

(THE BRITISH ALUMINIUM CO., LTD., ADELAIDE HOUSE, KING WILLIAM-STREET, LONDON, E.C. 4.)

For many years past the public has been interested in cooking vessels made of aluminium as this metal possesses so many advantages over iron or copper, and to-day they are in wellnigh universal use. From time to time statements have been made that traces of aluminium in foodstuffs are harmful, and the astounding allegation has been made that cancer may be attributable to food prepared in aluminium vessels. The results of an elaborate investigation dealing with the action of foodstuffs on aluminium appeared in our columns about 16 years ago (THE LANCET, 1913, i., 54). The conclusion was reached that any suspicion of aluminium communicating poisonous qualities to food in the processes of cooking may safely be dismissed. Suspicion, however, endures, and whilst the harmlessness of metallic aluminium for cooking purposes has never been successfully challenged, we think it may not be out of place to record some fresh work we have carried out on the amount of aluminium taken up by water and meat when boiled and stewed under ordinary cooking conditions.

Water.—Ordinary London water containing about grs. 19 of saline matters per gallon, of which grs. 13 were calcium carbonate, was boiled for one hour in an aluminium kettle, and a similar volume in a glass beaker. The two waters were analysed, the one boiled in the kettle contained grs. 1·28 of aluminium per gallon, the other in glass gr. 0·01 per gallon. The water had thus dissolved grs. 1·27 of aluminium per gallon, or 0·00018 per cent. London water is, however, slightly alkaline, and as the kettle becomes "furred" the amount of aluminium dissolved will tend to become less.

Meat.—Fresh meat was gently boiled in tap water containing a little salt for one hour in an aluminium saucepan and in a glass vessel serving as a control. Analysis showed that no trace of aluminium had been dissolved from the metal vessel. This is a result which might have been anticipated from the work of J. A. N. Friend and R. H. Vallance (*Transactions* Chem. Soc., 1921, cxxi., 932) and C. K. Tinkler and H. Masters (*Analyst*, 1924, xlix., 30), who found that the colloidal matter which is present in most foods materially lessens the amount of aluminium dissolved.

Although the published data on the toxicity of aluminium are very meagre, the general consensus of opinion appears to be that small quantities are without effect on the living organism. In some recent work of V. C. Myers, J. W. Mull, and D. B. Morrison (*Jour. Biol. Chem.*, 1928, lxxviii., 605), carried out on rats who received 2 mg. of aluminium per rat daily in addition to the stock diet, it was shown that the growth curves over four generations of these animals compared well with those of the controls. The aluminium-fed rats showed a slightly greater initial growth; in other respects the addition of aluminium to the diet was without effect.

It would appear that aluminium vessels if of suitable purity are perfectly safe for cooking purposes, and even if small quantities are conveyed to the water or food, these are without influence on the health of the individual.

THE LANCET.

LONDON: SATURDAY, DECEMBER 15, 1928.

THE KING.

THE following statement on the KING'S illness has been authorised for publication to the medical profession. It is dated Wednesday, Dec. 12th, at 3 P.M.

"To make clear the nature of this long and exhausting illness, it is necessary to state that a general blood infection and toxæmia were in the first two weeks prominent features and caused at one time grave anxiety. Moreover, the case has not presented the characteristics of a typical pleuro-pneumonia. Seven days ago the evidences of general infection had become less prominent and the blood cultures were sterile, though all medical men will know that sterility of blood cultures is not conclusive evidence that general infection has ceased. During the last five days the temperature has again risen to a higher level, yet the pneumonic and pleural signs became at the same time less marked, and neither pleural puncture nor study of new and excellent radiograms disclosed any appreciable effusion. Seeing, however, that the original pleurisy had involved the diaphragm, a careful watch has been kept for the formation of fluid between the lung and the diaphragm and its extension to the posterior pulmonary surface. This morning there were signs of this development accompanied by an increased leucocytosis. By exploratory puncture at the right extreme posterior base purulent fluid was obtained which contains organisms morphologically resembling those previously found in the blood stream. Drainage will now be performed. Though this pleural localisation of the infection, so anxiously anticipated and looked for, makes the direction of advance more defined and hopeful, there is still in prospect a long and difficult struggle."

As we go to press we learn that an operation has been carried out successfully, and that drainage of pus is proceeding. Sir HUGH RIGBY was the surgeon and Dr. FRANCIS SHIPWAY the anæsthetist. The position is so far satisfactory, and those who are conversant with the course of symptoms and their significance in these cases will recognise that we have here foundation for the renewal of legitimate hopes.

THE RACES OF MAN.

PERICLES said that the citizen who holds aloof from public affairs is not merely harmless but useless. THOMAS HENRY HUXLEY certainly did his best to apply the art of natural knowledge to human welfare, and on the first Sunday after Epiphany in 1870 he went to St. George's Hall in Langham-place to argue that the people of Ireland were so little different from the people of England that political separation could not be justified on the ground of racial distinction. He wanted common men as well as scientists to perceive the truths of ethnology and so to know what they ought to do in the hope that they would have power to fulfil their convictions in practice. There were to HUXLEY, and are still, four great divisions of mankind —the nordic type of Europe, the negroid of Africa, the mongolian of Eastern Asia, and the Australian aboriginal; the precise number of subgroups is a matter of taste—there may be 40. HUXLEY regarded the obvious intermediates by which these groups grade into one another as the result of hybridisation, of the mixture of what were primarily separate. He recognised the British as a mixture of yellow nordics and black mediterraneans, and saw that English, Welsh, Scottish, and Irish differ only in their relative proportions of these two components. Hence he refused to admit that any body of people in these islands was distinct enough to be called a race. It was perhaps a natural conclusion for a zoologist; he wanted races as pure and sharply separated as those which are perceptible in animals and plants, and if intermediate forms are due to hybridisation, the product is necessarily indeterminate and uncharacteristic.

In his Huxley Memorial Lecture to the Royal Anthropological Institute,[1] Sir ARTHUR KEITH offers another interpretation of the facts. He urges that the mixed populations which are so common may as well be the result of incomplete differentiation as of partial fusion. Pure races have evolved to the state where every individual is physically recognisable at sight; the races in Britain are partly differentiated and only a proportion of each have distinctive bodily characters which are diagnostic. Interbreeding, of course, occurs, but he regards this as relatively unimportant, and as a good Darwinian he attributes the differentiation of man to variation, selection, and isolation. Of the physiological processes involved in natural variation, he attributes chief importance to the ductless glands—an attractive hypothesis with a slender foundation of ascertained fact which he has put forward before. Selection is involved in changes in the environment and in inter-racial competition. To isolation as a factor in fixing and maintaining specific characters, evolutionists attach more and more importance; some indeed would go so far as to say that speciation is impossible without it. And it is in isolation and segregation that nations and races find their contact as units of classification. The barrier between groups may be physical or political or psychological—anything which prevents free intermingling and interbreeding may be effective. Hence a range of mountains or a Mussolini law or incompatibility of temperament or a different scale of spiritual values may help to fix a racial type. Political nations are by no means ethnological races, but they are on the way to become so, and the last hundred years have seen the conflict between an exaggerated nationalism which favours segregation and a spatial shrinkage of the world which goes to undo it. If HUXLEY'S view was correct, racial distinctions will become less and less and, as Sir ARTHUR KEITH says, he is a man with whom it is always dangerous to disagree.

[1] Journal of the Royal Anthropological Institute, 1928, lviii., 305.

THE RESULTS OF TONSILLECTOMY.

TONSILLECTOMY has long been a common operation and is becoming commoner. At the Hospital for Sick Children, Great Ormond-street, it was done 2886 times in 1920 and 3909 times in 1927—an increase of 34 per cent.—and in the United States removal of tonsils or adenoids is said [1] to account for roughly one-third of all operations among the urban population since 1924. This suggests that on the whole it is successful, and certainly the laryngologist who is careful in selection of his cases will see many gratifying successes with but few failures. Not long ago DONALD PATERSON and G. W. BRAY [2] drew attention in our columns to the gain in weight shown by London children after tonsillectomy. They kept some 500 children under observation before and after operation, and found that before the tonsils were removed nearly one-fifth were losing weight, whilst the remainder were gaining little. In the six months following tonsillectomy, on the other hand, the average gain was 7 lb., which may be compared with an average gain of 2 lb. in normal children of the same age. These observers reach the conclusion that in a properly selected case there is no single operation in children's medicine that is more successful or shows such dramatic results. This opinion will be widely shared, but is by no means universal, and many of the statistical surveys recently attempted do not afford much justification for it. No doubt one of the principal causes of the discrepancy is that patients are not always well selected for the operation. The selection is far from easy, for, on the one hand, the indications for operation are very numerous and in some directions rather indefinite, and, on the other, it is often very hard to determine by examination whether any individual tonsil is unhealthy or not. It is not even a simple matter to estimate accurately the size of a tonsil, for some of them are deeply placed and embedded, whilst others are prominent and superficial. Nor are we sure that an enlarged tonsil is necessarily unhealthy, for sometimes enlargement may be due, as J. H. P. PATON [3] states, to an increase in the number and activity of the germinal follicles—a physiological response, apparently, to some stimulus whose nature is unknown. Sometimes tonsils cause symptoms mechanically by their mere enlargement, and this may make removal advisable; but it is in this group that most of the unnecessary operations fall, especially since routine inspection of large numbers of school-children was started. In doubtful cases examination of the throat with a tongue-depressor is not enough to decide the question of tonsillar sepsis. Redness of the surrounding pillars is a valuable guide, but may arise from other sources, such as septic teeth. Further help may be got by squeezing the tonsil. If definite pus be thus obtained infection of the particular crypt is proved, but a little thin secretion is not conclusive evidence of infection, nor are one or two hard, chalky, or caseous masses in the crypts a proof that toxins are being absorbed from them. It is hard to get reliable bacteriological evidence in these cases, for there are many organisms in the mouth, and a swab taken from the surface of the tonsil will necessarily collect them; it is even difficult to prove that the organisms found in material squeezed from the crypts are pathogenic. Even after removal of the tonsil it is impossible, as R. B. LUMSDEN [4] remarks, to isolate organisms from its substance uncontaminated with those from the interior of the crypts; but the differentiation here is perhaps of little importance, for toxins can doubtless be absorbed from the tonsillar crypts. In the more difficult cases of this class the history is of great importance, and must often be the determining factor in deciding for or against operation. A history of attacks of sore-throat, especially if associated with increased symptoms of toxic absorption, strongly suggests that the tonsils are at fault.

Another cause of the comparatively bad results of tonsillectomy, as shown in group statistics, is that often the tonsils have not been completely removed. The results of treatment cannot fairly be judged from cases in which it has not been properly carried out, and statistics certainly indicate that greater care and skill should be exercised in the performance of an operation which is not so easy as is generally believed. In America J. P. CLARK [5] found tonsil tissue remaining in 41 per cent. of 143 patients who had been operated on three or four years before, while P. S. RHOADS and G. F. DICK [6] found "fairly large" pieces of tonsillar tissue in 73 per cent. of student nurses whose tonsils had been removed. In Scotland, in a large school for the daughters of the well-to-do, PATON found a visible tonsil on one or both sides after previous operation in 54 per cent. of 182 girls. From a statistical consideration of the occurrence of enlarged cervical glands he concludes that the lymphoid tissue regenerated after operation is not infective, but he does not perhaps take into sufficient consideration the possibility that this glandular enlargement is often merely the quiescent result of past infection. On the other hand, RHOADS and DICK find from bacteriological examination that the "stumps" of tonsils removed by a second operation are much more heavily infected than tonsils removed for the first time, and they quote a series of cases which improved strikingly after the removal of tonsillar tissue left by a first operation. All authorities now seem agreed that the tonsils should be removed completely or not at all, but the technique of the operation remains a matter of personal preference and skill. PATERSON and BRAY say that a complete dissection of the tonsil and lingual tonsil must be made, as is the custom at Great Ormond-street, but other authorities show good reason for maintaining that the faucial tonsils can be completely removed with the guillotine by the method of WHILLIS or of SLUDER, and that this is a less severe and equally successful method in suitable cases. Whatever is done, a considerable amount of skill is essential.

The operation is nowadays performed in the treatment of a great variety of conditions. In simple enlargement without symptoms we believe it is seldom necessary and is perhaps done too often. When enlargement of the tonsils and adenoids is associated with disturbance of function of other organs, especially with interference to respiration or to the Eustachian tubes, either mechanically or by spread of inflammation, intervention of some kind is obviously called for, and it is in this class of case that the largest proportion of successes is obtained. There is another group in which tonsillar sepsis produces distant effects on the alimentary tract, the appendix, or the gall-bladder; by absorption of toxins into the blood stream it may cause general debility or the group of symptoms generally called rheumatic. In this group it is harder to prove the culpability of

[1] S. D. Collins and E. Sydenstricker: Quoted by Rhoads and Dick (ref. 6.)
[2] THE LANCET, Nov. 24th, p. 1074.
[3] Quart. Jour. Med., October, 1928, p. 107.
[4] Jour. Laryng., 1928, xliii., 724.
[5] Jour. Amer. Laryng. Assoc., 1913, xxxv., 43.
[6] Ibid., 1928, xci., 1149.

the tonsils, and though, when this can be done, tonsillectomy is sometimes strikingly successful, the disease will often persist despite the fact that in the first place it was caused by tonsillar infection. Statistics do not show that the occurrence of rheumatic fever, joint pains, or chorea in children are markedly controlled by tonsillectomy, nor that susceptibility to the infective fevers is diminished by the operation. In a further class, in which symptoms such as enuresis are ascribed to reflex irritation from tonsils and adenoids, the results of operation are still more uncertain. It is only if the individual case is carefully considered, before deciding on tonsillectomy, that the results will be satisfactory. It is not to be expected, of course, that the conditions originally traceable to enlarged tonsils—such as cervical adenitis, rheumatism, or aural disease—will always clear up when the primary focus or port of entry has been removed, and fallacious conclusions are sometimes drawn from an abnormally high incidence of these conditions among persons who have undergone tonsillectomy. This abnormal incidence, where it occurs, may of course be accounted for by the fact that the conditions in question were present before operation and have not been cured. In cervical adenitis there is a further source of error in that a chronic fibrosis is apt to persist after removal of the infecting agent, and statistics which merely mention palpable enlargement of the glands are therefore open to criticism.

THE PROBLEM OF THE UNQUALIFIED ELECTROTHERAPIST.

IT is now over a century since the country realised the danger of allowing unqualified and unlicensed persons to handle dangerous drugs; the Apothecaries' Act of 1815 controlled the pharmacist in a way which is undoubtedly to the public interest and which few find too severe or vexatious. Half a century later the doctors were put under a form of discipline which did, however, not extend to penalising those who practised outside the pale. Twenty years passed and the first Dentists Act provided a register and qualification for dental practitioners. Quacks may still practise medicine, for, in the words of Sir WILLIAM PRIESTLEY[1] accoucheur and Member of Parliament, "in England the principles of liberty are carried so far that men insist on their right to . . . being treated medically to their own hurt, if it so pleases them. The only possible limitation is to insist that the public shall be able to distinguish between those who have been educated and registered and those who have not." The abuses of unrestricted medical practice do not appear to be sufficient, in fact, to arouse public anxiety, but the position became so grave with regard to dentistry as to lead the Departmental Committee of 1920 to describe the body of unqualified dentists as "a menace alike to the public health, the registered dental profession, and the more reputable unregistered practitioners." "We are of the opinion," the Committee reported, "that in the interests of the public, dental practice by unqualified persons should be prohibited under penalty, and that nothing short of this is likely to prove effective"—a recommendation which in due course became law.

A precisely parallel situation has arisen to-day in respect of electrotherapeusis, a wide term including the use of X rays, radium, diathermy, ultra-violet light, and infra-red rays. Most of these agents are provided by Nature and have been used empirically for centuries, as Dr. E. P. CUMBERBATCH pointed out recently in his Chadwick Public Lecture. It was, he reminds us, their application by charlatans to all sorts of unsuitable maladies that brought physiotherapy as a whole into discredit at the end of last century. It was also, we believe, the activities of a small pioneer band of non-medical radiographers which in the early days of the present century did so much to bridge the gap between the engineer and inventor on the one hand, and the general practitioner on the other. There can, however, be no doubt that public interest demands some control of these potentially dangerous therapeutic agents, especially in view of the most recent experimental results of their application. The French competent authority proposes to disallow ultra-violet radiation except as part of the hospital services. Experience with dentistry suggests that the proper measure is rather a roll or register of the adequately qualified, protected by a penal clause. The Representative Body of the British Medical Association has passed a resolution affirming its belief in the necessity for a roll; the American Medical Association has already been at work on the problem for three years, and has gone a good deal further. In a recent article[2] Dr. A. DESJARDINS describes the work of the Council of Physical Therapy, which was instituted in 1925 by the American Medical Association to investigate and report. Its first activity was to publish a series of articles on the physiological and therapeutic action of the many different forms of physiotherapy. The Council soon found a grave lack in the medical curriculum of adequate and enlightened instruction in these methods and of suitable teachers, and it is at present coöperating with medical societies in an attempt to arrange undergraduate and post-graduate courses in physical therapy and the essential knowledge of biophysics which underlies it. The Council have also prepared a code of rules to govern the submission and acceptance of devices or methods submitted by manufacturers, and is attempting the Herculean task of reviewing the literature and preparing a scientific nomenclature. A useful report has been made on the transmitting power of various materials alleged to be permeable to ultra-violet rays. A subcommittee is gathering information on physical standards, on protection, and on other questions of fundamental concern to radiologists and is debating the vexed question of standardisation.

These activities provide some useful hints on which the medical profession in this country might proceed even if public interest cannot at present be sufficiently aroused for legislative measures. The number of physiotherapeutic quacks over here falls far short of that across the water, and we must see to it that the situation described by Dr. DESJARDINS does not arise in this country. "Instead of the natural growth resulting from gradual increase in knowledge," he says, "it soon became apparent that physical therapy had fallen into the hands of boosters who had nothing to learn from the realtors of California and Florida, and who were not troubled with petty scruples. The result was that the hapless practitioner of medicine was nearly swamped by the avalanche of incandescent, ultra-violet, and infra-red lamps, high-frequency machines, magic knives which cut without having to be sharpened, and a host of other mysterious devices which were to revolutionise the treatment of disease and render any knowledge of clinical medicine all but useless . . . . The ill repute in which everything relating

[1] THE LANCET, 1896, ii., 1065.

[2] Jour. Amer. Med. Assoc., 1928, xii., 1025.

to physical therapy had been held was so great that few physicians could hear the expression 'physiotherapy' without an involuntary contraction of the nasal muscles." Such a state of affairs is definitely inimical to the public and scientific interest. In these physiotherapeutic methods we have a most valuable means of maintaining and restoring health, but we have also a two-edged weapon of great potency. It behoves us to place them in the hands of responsible persons who can be trusted to administer them to the public good and who can be restrained and punished if they abuse their trust.

Annotations.

"Ne quid nimis."

DISTEMPER.

THIS disease, which has baffled many investigators in search for a remedy or protective measure, has at last yielded some tangible results of practical value to intensive study. This has been made possible by the combined interests of the *Field*, representing the owners of dogs, and the Medical Research Council standing for medical science, aided by the knowledge and experience of the veterinary profession. Determined and skilful attacks have previously been made on the stronghold, but the extraordinary difficulties inherent in the problem have prevented any indisputable addition to knowledge concerning the ætiology or prophylaxis of distemper. Dr. P. P. Laidlaw, F.R.S., and Mr. G. W. Dunkin, M.R.C.V.S., have just made a report [1] to the Distemper Research Committee summarising the work which they have done during 1923–28 at the farm belonging to the Medical Research Council at Mill Hill. Before they could seriously begin their investigations several essential obstacles which had wrecked previous inquiries required careful consideration. It was necessary to provide means of isolating the susceptible stock, the experimental animals, and the uninoculated controls. This isolation was attempted in the first place in carefully contrived buildings. Separate rooms for the dogs undergoing experiment with special arrangements for feeding and attending to the animals and for disinfecting the personnel were designed, such as to reduce to a minimum the risks of carriage of infection by human agency. These experimental dog-kennels opening separately into a central room had to be abandoned for the intended purpose, since it became clear that infection could be carried through the air under these conditions. Finally, satisfactory isolation was achieved by putting each dog in a separate kennel in the open air with 15 to 20 yards between each. A supply of uniformly susceptible dogs was obtained by breeding the dogs in an isolated compound, by which means the chance of importing a carrier of distemper was also avoided. Previous workers have been very much hampered by the difficulty and uncertainty of obtaining susceptible animals which had not already had a mild attack and were consequently immune. So far this scheme has worked well, and in the last four years only one possible accidental infection has occurred, and all the puppies which have been tested have proved susceptible to experimental infection. However, dogs breed slowly and the space required for their isolation is very great.

The next long step towards a successful research was made when it was realised that ferrets were susceptible to the same distemper virus as dogs and that their attacks were fairly uniform in severity and character, and were almost invariably fatal. Ferrets, too, need far less space for their accommodation and breed freely and rapidly in captivity. It was found, however, that they too were liable to aerial infection and each experimental ferret needed a separate room. Nevertheless the ferret proved a good test animal. Also their blood and organs afforded a fresh supply of potent virus which was virulent for dogs as well as ferrets and was much more uniform in strength than similar tissue juices from dogs. Incidentally it was established that the distemper of cats was a different disease. The conditions for the work having been so far perfected, it was possible to study the pure disease clinically and a temperature chart with two waves of fever was established as typical and usually diagnostic in dogs, whilst the other symptoms and their severity were very variable. The nature of the primary infective agent was shown to be not bacterial, or at any rate not due to any readily growing microbe such as the *Bacillus bronchisepticus*. This latter organism had been much in favour with those who had investigated distemper of recent years, although these workers themselves had been fully alive to the difficulties and uncertainties of their task in the absence of such complete arrangements as have been available at Mill Hill. Bacteria are no doubt important secondary invaders. Very potent virus was present in blood from which no bacteria could be cultivated, and eventually it was found possible to confirm Carré's claim made in 1905 that the virus would pass through a filter which kept back bacteria. The property of passing bacterial filters was not, however, at first found easy to demonstrate, as Kregenow showed in 1909 when he failed to repeat Carré's observation.

Having mastered the technique of regular and controlled infection and passage of the disease alongside of uninfected control animals in similar isolation, and having learnt how to prepare and test the virus, an attempt was made to protect animals by inoculation. A vaccine composed of virus rendered uninfective with formalin was tried, such as has been found successful in rabies and experimentally in foot-and-mouth disease. A 20 per cent. emulsion of ferret's spleen in salt solution with an addition of 0·1 per cent. of formalin made a vaccine 2·0 c.cm. of which given subcutaneously to a ferret afforded almost complete protection for some days, so that a large dose of active virus two weeks later produced hardly any symptoms but induced an apparently permanent solid immunity. An attempt directly to transfer these experiments from ferrets to dogs using a vaccine made with ferret's spleen proved disappointing. Three large doses at intervals of seven days provoked a very much smaller degree of immunity. When, however, virulent lymph glands, spleen, and liver from a dog were made into formalised vaccine a very satisfactory prophylactic was obtained, one dose of which followed by the inoculation of an attenuated strain of virus produced complete immunity in a dog with very little disturbance of health. It may also be noted as an addition to an extremely interesting story in pathology that vaccine made from dog tissues gave only very poor protection to ferrets even after three doses. By means of vaccine for dogs made from dogs in this way and of a subsequent dose of living virus it has been possible to protect almost all dogs subjected to the treatment, which have subsequently been tested by inoculation or by contact with cases of distemper. The vaccine has been used on 949 dogs so far under the care of 44 different veterinary surgeons in the last two and a half years with uniformly encouraging results. As examples, the experience of its use in two foxhound kennels may be cited. In one instance 12 couples were vaccinated and all escaped an attack, although they were exposed to infection in kennels in which out of 35 unvaccinated couples 11 died. In other kennels 22 vaccinated couples had no illness, but of 45 unvaccinated couples 24½ died. Hope is held out that a serviceable therapeutic serum may in future be available.

As regards practical results the authors point out that the method of vaccination is of established

[1] Fuller accounts have been published in the Journal of Comparative Pathology and Therapeutics, vols. xxxix. and xli.

utility, but that the vaccine requires skilful manufacture, testing, and administration. The vaccine is efficient in proportion to the virus content of the tissues of which it is made, and this must be tested before the vaccine is used. A large batch of vaccine has sometimes been made from material which turned out to be of feeble activity and the whole was therefore useless and had to be thrown away. If it were possible to cultivate the virus in vitro the production of vaccine might be much simplified. All attempts in this direction have so far failed. Dr. Laidlaw and Mr. Dunkin believe that the manufacture can be carried out efficiently in commercial laboratories with sufficient skilled control. They hope themselves to continue research into methods of perfecting the vaccine, to study the production of therapeutic serum, and to make further experiments on culture.

PAY-BEDS AND VOLUNTARY HOSPITALS.

"Though no man is sent thither against his will, there is no sick person in all the city who had not rather lie in the hospital than at home in his own house."—*Sir Thomas More's "Utopia."*

THESE words, written in faith when the hospital was the lazar house of the leprous, the plague-stricken and the destitute, formed the text of an address delivered by Mr. R. G. Hogarth to the General Federation of Trade Unions on Dec. 6th. The striking change of attitude towards the voluntary hospital that has come about during the last century is largely due to the advances in the scientific aspect of medicine. While therapy demanded little more than the skill and experience of the doctor in compounding drugs, the patient was obviously better off in his own home, where loving care might make him as comfortable as possible under the circumstances. Now that treatment is a complicated affair of blood tests, chemical estimations, electrotherapeutic applications, and intricate surgical procedures, the comforts of home recede into insignificance before the equipment of the large institution. "On the operating table," as Mr. Hogarth remarked, "the patient's needs are very few, and even they must be sterilised." The hospital of yesterday was a charitable—even a slightly patronising—provision, for the very poor, of an inferior degree of the home-comfort which every middle-class household could provide. The hospital of to-day is the centre of model treatment and skill, to which even the rich seek admittance when anything is really wrong with their bodies. Yet the hospital is in the anomalous position of trailing clouds of its former reputation, and of trying to subsist on charitable funds as if it were limited to the destitute, whereas its clientèle now includes the sick of all classes. It was Mr. Hogarth's object to impress the anomaly of this position on the trade-unionists whom he addressed, and to convince them that it was in the interest of the people and of medical science that the future of hospitals should lie in the extension of the "pay-bed" system. The nursing-home as a solution of the problem, he maintained, could only be temporary. With every elaboration of the art of diagnosis and treatment the nursing-home becomes more inadequate, for no small institution run for profit could provide resident physician, consulting staff, and all the paraphernalia of laboratory and radiographic equipment. Even the large, expensive private hospital, said Mr. Hogarth, could not have the advantages of the paying annexe attached to the big general hospital, for the general hospital naturally got the best of everything that was going, and the "hospital case" needed that best. As Mr. Hogarth pointed out, the patient who pays four or five guineas a week to a hospital is apt to think that the institution is doing quite well out of him. It should be carefully explained to him that the provision of those beds made a heavy demand on the capital of the hospital, and that to that extent the paying patient is receiving charity. He must by no means come to enter a hospital as he enters a hotel. Most people will agree with Mr. Hogarth that this diversion of charitable funds to meet the needs of an overburdened middle and artisan class would not be regarded by pious benefactors of hospitals as a breach of trust. He is second to none, however, in his insistence that the primary function—treatment of the sick poor—must in no way be neglected through this new departure, and he agrees with the King Edward's Fund committee that paying beds for those who pay less than the maintenance-rate should be limited. Ideally, the capital expenditure should come from some philanthropist—as Lord Woolavington has provided it for the Middlesex Hospital. Failing that, Mr. Hogarth anticipated that hospitals would begin to invite subscriptions for that particular purpose or would start insurance schemes such as the Chapman-Wright scheme at St. Thomas's, the Hospital Savings Association, or the British Provident Association. By insurance alone can the middle classes make adequate provision for their needs in case of grave illness, and the more widespread the practice of insurance the more will the hospital be protected from abuse of its generosity by the middle-class patient who seeks its aid in emergency when he could well have paid for that aid by greater prudence in the preceding years. Another possible solution of the need for capital expenditure is to make some use of the large numbers of beds that will very soon be handed over to public authorities. Mr. Hogarth concluded with a plea to the trade-unionist to trust the good faith of the hospitals. "Let us aim," he said, "to make the general hospital of the future a general hospital in fact as well as in name, where the indigent sick will be treated free, where the less poor will contribute according to their poverty, the less well-to-do according to their necessities, and the well-to-do according to their means. Do not attempt to tie down the hospitals too closely by rules and regulations. Audit them as much as you like, but trust them. They have no axe to grind save the advancement of medical science and the betterment of the public health."

ASTHMA IN YOUNG CHILDREN.

IT has been known for many years that asthma may occur in infancy; nor is this surprising when we consider the tendency towards spasm in the infant. In the "bronchitic" form, which resembles an acute attack of capillary bronchitis with abrupt onset and subsidence, the asthmatic nature of the condition may not be recognised despite an unusual amount of wheezing and dyspnœa. This is the type described by Prof. K. Stolte,[1] of Breslau, whose attention was called to it by a small series of cases under his care. In a typical case, a child of 14 months, he describes an abrupt onset with cough, slight rise in temperature, a pulse-rate of 160, and a respiratory-rate of 80. The child was cyanosed and distressed, using its accessory muscles of respiration. Percussion gave no dullness over the lungs behind or in front and no difference between the percussion note on the two sides. The cardiac dullness was obliterated and the liver enlarged downwards. With such a clinical picture other disorders are likely to come to the mind; thus a foreign body in the respiratory tract has to be considered in view of the rapid onset, whilst laryngeal diphtheria may cause a similar appearance. Differential diagnosis is not always easy, especially if tracheoscopy and radiography cannot be undertaken. Prof. Stolte points out that in diphtheritic laryngitis it is the inspiration which is spasmodic and the expiration powerful, whereas in asthma inspiration is marked by muscular effort, and during expiration the chest is almost motionless. The inhalation of a foreign body usually causes sudden severe and painful spasmodic coughing and the subsequent disorder lasts longer. The attack of bronchial asthma in young infants is generally short, but it is nevertheless alarming, and fatal results have been recorded. The treatment is usually satisfactory. Inhalation of oxygen for the

[1] Jahrb. f. Kinderheilk., November, 1928.

cyanosis; adrenalin, atropine, and calcium preparations for the spasmodic condition of the bronchioles; and cardiac stimulants such as digitalis and camphor for the cardiac failure (as shown by the enlargement of the liver) are all advisable. Sedatives should be given to calm the child and promote sleep after the attack has been controlled, and in the case quoted these measures quickly restored the child to normal, so that 40 hours after this acute and severe respiratory affection the child was sitting up in bed with only a few adventitious sounds in the lungs to indicate any past disorder.

PREMEDICATION WITH ANÆSTHESIA.

THE discussion at the Anæsthetic Section of the Royal Society of Medicine, following Mr. E. S. Rowbotham's paper on the use of paraldehyde, makes it plain that there is still a good deal of difference of opinion with regard to the advantages of using sedative drugs before the administration of anæsthetics proper. It certainly would appear a priori that multiplication of injected drugs as in Gwathmey's so-called "synergistic" method is undesirable. To begin with, there is little or no definitely ascertained knowledge of the action of these drugs in combination. The very existence of "synergism" has been denied on the grounds of experimental and pharmacological evidence against it, brought forward most cogently by a countryman of Gwathmey's. Obviously the repeated hypodermic and rectal injections are a nuisance unless they procure some very decided advantage. They entail a large amount of trouble for nurse or anæsthetist and a certain amount of inconvenience for the patient. Nevertheless there are many patients for whom it is a great advantage, if not an actual necessity, that the taking of the anæsthetic should be preceded by a powerful sedative of some kind. If that sedative effect can be procured by a single hypodermic or a single rectal injection it appears to us that this is much to be preferred to several injections. One speaker at the meeting to which we have referred above recommended morphine and scopolamine for this purpose, and another urged strongly the use of avertin, which is given rectally, as paraldehyde is. It appears that paraldehyde alone is insufficient generally to procure the desired drowsiness. Avertin is perfectly efficient in this respect. The long sleep that follows the use of efficient premedication is regarded by some of the speakers as a desirable by others as a dangerous consequence. All were agreed on the amount of extra care and trouble that devolves on the nursing staff in institutions where effective premedication is widely employed. There was also a good deal of comment on idiosyncrasy towards some of the drugs used, especially hyoscine, and it was recommended that when possible preliminary trial of a patient's reaction to this drug should be made by the use of minute doses.

THE APPLE.

THE apple as physician has been so abundantly introduced to everyone that medical men cannot but feel an interest in the apple as patient, and the Report for 1927 of the Food Investigation Board might well prove a Christmas best-seller amongst the medical profession, for it devotes many pages to the physiology and pathology of this fruit. An apple consists of sugar, acid, cell-wall material, soluble pectin, minerals, and an organic substance, allied to the carbohydrates, of which the chemical nature is still unknown. The traces of alcohol increase as the fruit rots. Fungus invasion is one of the most serious apple diseases, and its investigation follows lines very familiar to the bacteriologist. It has been found that every individual apple has its characteristic resistance, and that the rate of invasion rises or falls according to the breed of apple and the experimental conditions. The differences in resistance can be correlated with differences in chemical composition of the fruit. Low water content, high acidity, high potash content, and low nitrogen content are associated with high resistance, and the converse is also true. We cannot yet reduce the complicated resistances of the human body to simple chemical terms, but it seems likely that even this will come in time. Another disease of apples is "low temperature internal breakdown"—the hypothyroidism of the vegetable world. This also depends to some extent on the constitution and metabolism of the fruit, but environmental factors play their part. The onset is accelerated by reducing the concentration of oxygen or increasing the amount of carbon dioxide in the storage room. On the other hand, if the storage temperature is kept above the critical range of susceptibility, the reduction of oxygen and increase of carbon dioxide lengthens the life of the apple. Gas storage at about 40° F. is therefore better than cold storage. Long life is related to small size and low respiratory activity and delayed climacteric. The largest apples have the highest respiratory activity and the shortest life—though this is not quite without exceptions, as one tree tested bore large rosy apples which took an exceptionally long time to reach the climacteric peak of respiratory activity. Keeping quality also improves with the heaviness of the soil, and there is a general correlation between the keeping quality and the "available" potash and phosphoric acid in the earth from which the trees spring. A low nitrogen, low acid, and high sucrose content means a good keeper, and apples vary considerably in their composition. It is hoped that this variation may be controllable, as it has been shown to depend to some extent on cultural factors. Apples grown in the warmer parts of England are better keepers, for they have low acid values and high amounts of sucrose. The amount of nitrogen does not seem to depend much on the environment, and research is in hand to find out what internal factors govern it. It is clear that these investigations are of immediate practical value to the fruit-grower and, through him, to the consumer. It is conceivable that they may one day point the way to research on the metabolism of more highly organised forms of life.

PARKINSONISM AND THE ATROPINE GROUP.

SOME months ago a good deal was heard of the value of stramonium in the treatment of chronic encephalitis, and it is interesting to have a report from St. Bartholomew's Hospital on the merits of the drug. Dr. E. A. Carmichael and Dr. F. H. K. Green, of the Medical Professorial Unit, in their clinical and instrumental study of the effects of stramonium, hyoscine, and other alkaloids, find that stramonium was more efficacious than the others in alleviating the symptoms of the bradyphrenic parkinsonian. While they were disappointed with the pills of powdered stramonium leaves recommended by certain French writers, they got uniformly good results with tincture of stramonium. In considering this favourable opinion, it must, however, be borne in mind that it does not agree with the experience of certain other investigators. Thus in a paper on Oculogyric Crises in Chronic Epidemic Encephalitis, published in the current issue of *Brain* (1928, li., 285), Dr. P. K. McCowan and Dr. L. C. Cook discuss the palliative treatment of parkinsonism, and state that after prolonged systematic trials of the atropine group of drugs they find belladonna and stramonium inferior to genoscopolamine and hyoscine by the mouth. They point out that with few exceptions greater benefit accrues from the use of hyoscine hydrobromide by the subcutaneous route, but rightly emphasise the fact that injection should not be resorted to, however, in any individual case unless its greater benefits have first been demonstrated. It is evident that in the atropine group we have a number of drugs definitely useful in the treatment of parkinsonism and its concomitant mental symptoms, but (as so often in medicine) the patient as well as his disease must be considered. Only by trial in

each case can the correct dosage and the best preparation for the individual be decided, and in parkinsonism it should not be difficult for the practitioner to prescribe each drug in turn in increasing doses, and then decide which has given the greatest benefit.

THE STRUCTURE OF THE THYMUS.

THE thymus is commonly described as composed of two distinct tissue elements: lymphocytes or cells like lymphocytes, and epithelial cells which give rise to the familiar Hassall's corpuscles. The question has recently been reinvestigated by Miss Ruth Deanesley [1] at University College, who has studied the destruction of the mouse's thymus by X rays and its regeneration and also what happens in tissue cultures. She comes without any hesitation to the conclusion that there is no epithelium in the thymus. Hassall's corpuscles are formed by the degeneration of blood-vessels and connective tissue; they are not permanent structures but are constantly being absorbed and fresh ones formed. She also describes the formation of ciliated cysts with the same mesodermal origin; they are especially conspicuous during the degeneration following X ray exposure and are, like the corpuscles, only temporary structures which soon autolyse away completely. Such cysts have been seen by various observers in the thymus and have naturally been ascribed to epithelium; pathological histologists meet with cilia or appearances which look like cilia in various strange places, and the possibility that these may be derived from connective tissue or endothelium will be of interest to them.

REACTION TO INSECT BITES.

THE current number of the *University College Hospital Magazine* (1928, xiii., 200) contains an account of some interesting experiments made by Prof. A. E. Boycott which go to show that the ordinary irritable wheal which often follows the bites of midges, mosquitoes, and other insects is an anaphylactic or allergic phenomenon. Persons show no reaction the first time they are bitten by any species of insect, but subsequent bitings may sensitise them and they then respond in the familiar way. They are presumably sensitised to the protein which the insect injects with its saliva. Decisive experiments are obviously hard to make with our native midges, &c., since no one knows exactly what has bitten him in the past. The present experiments were made with the small sandfly *Phlebotomus papatasii*, bred at the London School of Hygiene and Tropical Medicine by Dr. P. A. Buxton, from larvæ sent from Jerusalem by Dr. Oskar Theodor. This insect occurs all round the Mediterranean but does not come nearer England than the neighbourhood of Paris; it may, therefore, be presumed that people who have stayed at home in this country have never been bitten by it. Using throughout the same batch of flies, Prof. Boycott found that four such people gave no reaction at all to their first bitings; in another individual who had been freely exposed to *Phlebotomus* in the East ten years ago, the first application of the insects was followed by immediate wheals. Of the four negatives, one was doubtfully positive as being bitten for the second time two days after the first biting, and gave a violent reaction to the third biting, which was inflicted seven days after the first; one gave a large reaction to the second biting on the tenth day; one was negative on the seventh day and positive on the twelfth day; one was negative on the third and seventh days and strongly positive on the thirteenth and nineteenth days. All four therefore became sensitive and gave typical reactions which with *Phlebotomus* are hard wheals, very irritable and lasting as long as a fortnight. From these few experiments it seems likely that the period which must elapse after the first biting before the subject becomes sensitive is about 7 to 10 days—an interval which is quite in accord with an anaphylactic interpretation. It was also noticed that first bites might remain quiescent and invisible for 10 days and then flare out into violent wheals when a second biting was imposed on another part of the body—a pretty illustration of an intense local sensitisation due presumably to the local accumulation of antibody.

[1] Quart. Jour. Microsc. Sci., 1928, lxxii., 247.

NURSING HOMES IN LONDON.

THE impressions left on a patient by a sojourn in a nursing home are so often coloured by fear or softened by gratitude that they are largely discounted by the doctor who habitually uses the home and finds it satisfactory in essentials. It is only when he himself or a member of his family is condemned to a term of confinement within its walls that he becomes interested in administrative details, and sympathetic both with the difficulties of the owner of the home and with the bewilderment of the patient and his friends in the face of a routine which seems unreasonable if not sometimes positively unkind. A doctor has recently confided to us his experiences at a small nursing home of high repute. The food was well and daintily served, but the cooking was indifferent and the menus often ill-chosen. He had made no arrangement for a "special" since he had been assured that the (reduced) charge of 12 guineas would cover the necessary nursing; as a result, in the nauseating day which followed his operation he had been left for long periods with a basin at his side and a bell at his elbow. The bell was answered promptly except at night when, if the only nurse on duty was attending to another patient, there was no mechanism whereby she was informed that her services were required. His discomfort was increased that day by sensations of bruising and stiffness, accounted for by the fact that when still anæsthetised he had been carried round the corners of narrow flights of stairs doubled up in a canvas sheet. The kindness and attention he received from individual nurses, some of whom were not fully trained, deserved high praise. It is the unsuitability of the premises for their purpose to which he attributes most of the avoidable inconveniences, and also the convention whereby the inclusive fee does not ensure full-time nursing service for each patient while he is acutely ill. The ordinary patient enters a nursing home in a state of acute physical and mental distress, and is often completely reassured by the friendly confidence of the sister or matron who greets him and his friends. In the very best of homes—not necessarily the most expensive—his confidence is never allowed to flag, the whole atmosphere being designed to foster and maintain it. But too often a period of disappointment ensues, especially where the fees charged are high in comparison with the patient's income and ordinary expenditure, and he spends restless days worrying over the contrast between the charges made and the attention provided, often comparing the nursing home to a good hotel to its great disadvantage. Since the housing shortage and the popularity of flats there has been a great increase in the number of patients of the middle class who have to go to a nursing home when they are ill, and there is a growing impression that the provision made for their welfare might be considerably improved.

The keeping of a nursing home is a business like any other; the profits must depend on keeping down the overhead charges to the lowest point compatible with efficiency. This fact has been recognised by Parliament, and the Nursing Home Registration Act of 1927, which came into force last July, is obviously designed to prevent the exploitation of patients and to ensure that a reasonable standard of comfort and attention is provided. Arising out of this Act the London County Council has issued a notification to persons conducting nursing homes of the accommodation, equipment, and general arrangements which will be required by the Council in the case of any new home which applies for a licence. The standards indicated are based on present experience and may need to be supplemented later. The number of

trained and untrained nursing staff required will depend on the types of patient received. According to the memorandum, in the ordinary mixed home there should be, as a general rule, two day nurses and one night nurse for each six patients. At least one nurse must be on night duty whenever there are four or more patients at the home or when any patient is acutely ill. Wherever practicable suitable sitting-room accommodation should be provided for the nurses. Particulars of the standard minimum equipment suggested by the Council are appended, and the list of requirements does not seem to us at all excessive. For example, for each bed the linen provided should be three pairs of sheets, three draw-sheets, six pillow-cases, four bath towels, four face towels; also two sets of blankets, each set consisting of two upper blankets and one under blanket. The provision of stretchers or carrying-chairs is considered desirable; also of proper sluices for the cleansing of bedpans where possible. The Council considers the keeping in nursing homes of domestic animals, such as dogs and cats, to be undesirable.

Undue restriction of visiting hours, inaccessibility of the sister in charge, the routine use of certain favourite purgatives irrespective of the habits of the patient, disinclination to allow the patient to get up until a day or two before he is discharged—all these defects are common enough, and are an indication of inconvenient structure or insufficient staffing, coupled with lack of imagination on the part of the authorities. It is the doctor's business to ascertain whether the patient's convalescence is being retarded by feelings of resentment against the discipline under which he is placed; very often a word explaining the difficulties of administration will serve to put an entirely different complexion on the matter. Perhaps the most important way in which the practitioner can help is to arrange that at each visit he sees the patient, if only for a few minutes, in the absence of either the nurse, sister, or matron. Often, if ample opportunity is given for complaints, none will be made, but the patient will feel that his comfort and welfare are still in the hands of his own trusted doctor, who is guarding his interests, physical and financial, with unremitting attention.

THE MEDICAL DIRECTORY.

THE Medical Directory for 1929 reaches us on Dec. 10th, 1928. It contains evidence of careful revision, the indexing has been improved, certain alterations have been made in headings for the sake of clearness, but the sum-total of change amounts to very little, for, in its eighty-fifth year of issue the publishers of the Directory have little to learn in the way of arrangement or convenience. The only doubt we have is in regard to the binding, which may be good enough for average use, but unfortunately does not survive 12 months of constant office reference. Following the title-page is the usual numerical summary of the medical profession, which shows an increase of 857 entries in 1929 over those of 1928. As usual, the change is distributed unequally over the seven sections, for whereas London (+174), the provinces (+377), Wales (+9) and Abroad (+371) show increase more or less substantial, Scotland (−46), Ireland (−13), and the Services (−15) each show a small decrease. On this page appears a new table giving the numerical progress every decade from 1850 to 1920, in which it is instructive to note that the total number of names in the Directory doubled between 1850 and 1870 and again between 1870 and 1910. The introductory pages preceding the name index have been augmented from 116 to 122, the increase being due almost entirely to the inclusion of a directory of members of the Chartered Society of Massage and Medical Gymnastics. The space devoted to the Incorporation of Certified Masseurs and Masseuses has been proportionately reduced. Of strictly medical information the only addition is the enumeration of the Parliamentary Medical Committee, which, as everyone knows, includes the names of all the Members of Parliament who possess a medical qualification, but, as everyone does not know, also includes the names of four coöpted University representatives—namely, Colonel John Buchan, Sir Martin Conway, Sir Alfred Hopkinson, and Mr. J. J. Withers. The hon. secretary of the Committee is Dr. Drummond Shiels. In the local list for Ireland care has been taken to define the limits of the Free State and Northern Ireland. Finally, the section on the Health Resorts of Great Britain, Ireland, and New Zealand shows signs of careful revision and includes an interesting graph of the temperature of the sea in summer at various marine resorts. The Medical Directory is published by Messrs. J. and A. Churchill at the price of 30*s*.

AN OFFICE EDITION OF THE MEDICAL AND DENTAL REGISTERS.

IN order to facilitate the work of those who find it essential to know whether a medical practitioner is legally qualified or not—such, for instance, as officials of insurance committees, chemists, and druggists—the General Medical Council publish an office edition of the lists contained in the Medical Register, giving the names and addresses of all registered practitioners. This office edition is bound in paper boards, and issued from the office of the Council, 44, Hallam-street, London, W. 1, at the special rate of 7*s*. 6*d*. post free. Similarly the Dental Board publish an office edition of the Dentists Register containing the names and addresses of all registered practitioners and the local list at the price of 4*s*. post free. We are asked to state that in both cases copies are only issued at this price if they are ordered and paid for prior to Dec. 31st of the year preceding that of publication.

THE ARMY MEDICAL SERVICES.

THE reconstitution of the Army Medical Advisory Board, which is to include four civilian members of the medical profession, is noted on p. 1262, where the new personnel is set out. The Board will be at the disposal of the Secretary of State for War, if he desires to consult them on any question of policy in connexion with the Army Medical Services. Normally the Board will meet three times a year, but the civilian members may arrange additional meetings on giving the necessary notice. It has also been decided to appoint a committee, to be known as the Army Medical Directorate Consultative Committee, which will contain six civilian members of the medical profession who hold instructional or other appointments at university centres or medical schools. This committee will be charged with the duty of advising the Director-General Army Medical Services on the supply of candidates for the R.A.M.C., on post-graduate and other courses, and other administrative or purely professional questions. The civilian members of the Board and of the Committee are admirably representative of medicine, surgery, and physiology; doubtless, machinery exists whereby a pathologist may be coöpted on the last-named body.

Dr. Leonard Gregory Parsons, F.R.C.P., has been elected to the new chair of Infant Hygiene and Diseases of Children in the University of Birmingham.

THE Belfast Public Health Committee has recommended Dr. Charles Samson Thomson, medical officer of health for Deptford, for the post of medical superintendent and officer of health for Belfast.

FOLLOWING the award of the Nobel Prize for Medicine for 1928 to Prof. Charles Nicolle, director of the Pasteur Institute of Tunis, it is announced that the Nobel Prize for Chemistry is to be conferred on Prof. Adolf Windaus, of the Institute of General Chemistry at Göttingen, who has taken a large share in research on the photochemical formation of vitamin D.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XV.

THE DETERMINATION OF THE PRESENCE AND SIGNIFICANCE OF REDUCING SUBSTANCES IN URINE.

By E. C. Dodds, M.D., Ph.D., M.R.C.P. Lond.,

PROFESSOR OF BIOCHEMISTRY, UNIVERSITY OF LONDON; DIRECTOR OF THE COURTAULD INSTITUTE, MIDDLESEX HOSPITAL.*

II. The Biochemist's Results.

After having ascertained that the patient's urine reduces Benedict's solution, the practitioner is faced with a somewhat difficult problem. He has to determine whether the condition is one of diabetes mellitus on the one hand, or whether it is some harmless form of glycosuria on the other. In the majority of cases he will be helped by the manner in which the patient happened to come under his control. If the patient has lost a great deal of weight and is suffering from the classical symptoms of diabetes mellitus, the duties of the physician will be obvious. By far the most difficult type of case is that in which the urinary reducing substance is discovered more or less by accident during a routine examination, such as for life insurance. The problem here is that of an apparently normal person with no symptoms whatsoever, whose urine is found to reduce Benedict's solution. In this case a fermentation test should be performed according to the method described last week. If a positive result is obtained, there can be no doubt that the reducing substance is glucose. If, however, no fermentation occurs in the urine, then it is far better for the practitioner to send the specimen to a laboratory for further analysis, since it will only be in exceptional circumstances that he will have at hand the necessary materials and apparatus for determining the nature of a reducing substance which is definitely proven not to be glucose.

Let us assume, however, that the urine was fermented by yeast and, therefore, that glucose is present. The possibilities are:—

(1) The patient may be suffering from the early stages of diabetes mellitus and will in time develop all the usual symptoms.

(2) He may have a minor degree of carbohydrate intolerance which is shown by the appearance of glucose in the urine after a meal.

(3) He may be suffering from renal glycosuria.

Tests for Acetone Bodies.

In the first place, the practitioner should test the urine for acetone bodies—that is to say, Gerhardt's and Rothera's tests should be performed.

Gerhardt's test is done by adding 10 per cent. ferric chloride to the urine very slowly. If the concentration of aceto-acetic acid in the urine be 0·07 per cent. or more, the solution will turn a deep red, port-wine colour. This reaction is only given, however, when large quantities of aceto-acetic acid are present and is, therefore, a sign that the patient is in a very bad condition. Attention must be drawn to one or two fallacies connected with this test; for instance, if the patient has taken aspirin or any other phenyl drug, then the urine will give a reaction on the addition of ferric chloride somewhat similar to that obtained with aceto-acetic acid. This false reaction can easily be distinguished from the true, since the colour is much darker and of a more violet shade, but if any doubt is felt, then it is a good plan to boil some of the urine. On the addition of ferric chloride there will be a negative reaction if the colour was due to aceto-acetic acid, but if it was due to the presence of drugs, then the reaction will still be positive.

A more satisfactory test for acetone bodies than the above is *Rothera's test*. This is performed by taking half a test-tube of urine and shaking it with about three-quarters the amount of ammonium sulphate crystals until the urine is saturated. A few drops of dilute sodium nitroprusside are added, followed by two or three drops of 10 per cent. ammonia solution, and the whole is well shaken. A positive reaction consists of the development of a deep permanganate colour, varying in intensity with the amount of aceto-acetic acid present.

If these tests are both positive then it is fairly safe to conclude that the patient is suffering from diabetes mellitus, since acetonuria is very rarely present to any marked extent in conjunction with sugar in the urine except in cases of diabetes mellitus.

Glucose Tolerance Tests.

On the other hand, it may be that the Gerhardt and Rothera tests are negative, thus indicating that the condition is either renal glycosuria or possibly one of slight carbohydrate intolerance, as pointed out above. There is, unfortunately, only one sound and reliable method of distinguishing between these types of glycosuria, and that is the performance of a glucose tolerance test upon the patient. This procedure, however, is not very suitable for the practitioner, and the patient should always be sent to a laboratory or institution for the test to be made. The patient is taken in the morning before he has had breakfast and a specimen of blood is collected. Fifty grammes of glucose dissolved in water are administered to the patient and further specimens of blood are taken at half-hourly intervals after the meal for two hours. Each of the five specimens of blood is analysed and the sugar content estimated. The original height, together with the rise and fall of the blood-sugar during the period of the test, is a clear indication of the condition of the patient. The characteristic sign of renal glycosuria is a subnormal sugar content throughout the experiment, while the severe diabetic shows a very high figure which continues to rise during the whole of the two hours. This test is extremely useful for judging the severity of the condition and also for detecting the very early stages in the production of diabetes mellitus. In such a case the patient shows a "lag" curve—that is to say, there is a sugar-storage lag indicated by a very sharp rise in the blood-sugar above the normal limit, but in this type of curve the sugar content falls to normal again within the two hours.

However, if the report from the laboratory or the result of the practitioner's own tests indicate that *lactose* is present in the urine, it is not necessary to take any account of this. Lactosuria is a condition occurring almost solely in pregnancy and lactation and need cause no anxiety. Often one is misled by finding a reducing substance in the urine together with the presence of acetone bodies in a pregnant woman, and in many cases this condition has been treated by strict diabetic measures. Actually the condition is a normal one, since acetone bodies are usually found in the urine during pregnancy, and the reducing substance is lactose. A word of warning must, of course, be given as to the possibility of true diabetes mellitus supervening during pregnancy; the nature of the reducing substance must always be determined.

Should the report from the laboratory indicate the presence of *pentose*, again the practitioner need take no further steps other than to assure the patient that the condition is harmless. Pentosuria is one of the inborn errors of metabolism, remains uninfluenced by any known form of treatment, and so far as we know has no deleterious effect upon the patient's health.

* We regret that Prof. Dodds's appointment was not mentioned in the shortened heading to Part I. last week.

Special Articles.

GENERAL MEDICAL COUNCIL.

WINTER SESSION, 1928.

EXECUTIVE COMMITTEE.

THE meeting of the Executive Committee which preceded the full winter session of the General Medical Council was exceptionally full of interest to the medical profession at large, and we make no apology for giving a rather lengthy summary of a number of topics then discussed.

International Reciprocity.

The Committee considered the draft of a proposed International Convention on the Treatment of Foreigners, sent to the Council by the Privy Council for their observations. The relevant clause prescribes that nationals of one signatory who are allowed to live in the territory of another shall be treated equally, in law and in fact, with those of the country in which they live, and allowed to carry on all occupations permitted by law to its own nationals. If especial titles or guarantees are required, as in the practice of medicine, nationals of another signatory shall be allowed to exercise their occupation on submitting titles identical with those required of nationals or recognised as equivalent by the signatory concerned. The protocol includes a declaration that it is desirable that arrangements for the recognition of the equivalence of such titles or guarantees should be concluded between countries in which the necessary guarantees of equivalence appear to exist. The Committee resolved that the Privy Council should be informed that the Council regard it as desirable that agreements of this kind should be made, and that, "so far as Great Britain is concerned, these principles have always been acted upon so far as possible."

The absence of such reciprocity has led in the past and may lead again to international reciprocity. An example of unfortunate misunderstanding was provided by another communication from the Privy Council. This concerned a medical missionary with an Edinburgh degree who, finding himself temporarily in Haiphong owing to the trouble in Southern China, had asked the French authorities for permission to practise. The Governor-General had refused, saying that he believed persons were not allowed to practise in England by virtue of French diplomas. Although the Council had replied that the restriction only applied to registration and not to practice, and had suggested that the Governor, considering the exceptional circumstances, might allow this doctor to practise to the same extent that was permitted to French medical men in this country, their request was not granted.

Universities of Bombay, Lucknow, and Madras.

At its meeting the day before the summer session the Committee had decided to continue to recognise the M.B., B.S. of Bombay University provided the Council received, before July 1st, 1929, a satisfactory report from the Indian Government Inspector on the first Final Examination to take place under the new regulations in the academic year 1928–29. In the revised regulations sanctioned by the Government in October, 1928, there is no provision for a Final Examination before April, 1931. The Committee passed a resolution of regret. It would appear that by last summer's resolution the Bombay qualification will cease to be recognised from the summer of next year until the receipt of a favourable report in 1931.

The Committee considered a report by Colonel A. H. Proctor, who had been appointed by the Indian Government to inspect the examinations in Lucknow University on behalf of the Council. Colonel Proctor, who is the Presidency Surgeon in Madras, concluded that the final examination was of a satisfactory University standard, and recommended that the recognition of the M.B., B.S. be continued subject to the production and assessment of the obstetrics and midwifery reports at the examination, and to one other alteration of detail. The practical work in obstetrics is, he says, hindered by the purdah system, but this deficiency should be made up by the building of the new maternity hospital. The medico-legal examination is given great prominence—though Colonel Proctor reported that the questions did not sufficiently test the candidate's knowledge of mental diseases—and the examination in ophthalmic surgery is obligatory, and regarded as extremely important. He spoke very highly of the practical examination in pathology. The students' command of English was sufficiently good for conversation and to appreciate clinical teaching, but did not allow them to do their knowledge full justice in the written papers. Sir Norman Walker's note appended to the report commended Colonel Proctor's careful study of the position.

The University of Madras had reported on the changes and improvements carried out since the recent visit of Sir Norman Walker, and the Committee observed with satisfaction that most of the points which he had criticised had been attended to.

Rangoon University.

Colonel R. A. Needham, inspecting Rangoon University examinations in 1927, had reported unfavourably on the new regulation exempting from the premedical course in chemistry, physics, and biology those students who had passed the intermediate examination in them. The Committee considered a long reply by the University authorities, who maintained that to force these students to study the same subjects for another year would be a waste of time and would extend their course to the prohibitive length of eight years; the University invited inspection of its final examination, the standard of which was second to none in the East. The Committee, while maintaining their own views in regard to the points of difference, suggested the appointment of Colonel Needham to inspect the final examination in March.

Initials in the Register.

In 1924 a registered medical practitioner had applied to have the initial H. substituted in the Register for his middle name. This had been done with an addendum setting out in full the name as it previously stood. The practitioner requested that this addendum be omitted. The Committee directed that he be informed that if he complied with the prescribed requirements the initial H. could be omitted and all reference to his second name would disappear in due course. It has never been customary to enter initials in the Register in place of full names. It has only been done once, when Mr. Charles C. Elliott in 1922 produced evidence that this was his full name, and entered as such on his birth certificate and diplomas.

Education of Medical Students in Obstetrics.

A memorandum by the President of the Council on this subject formed an appendix to the report of the Committee; it set forth the development of the Council's efforts to attain a satisfactory solution, and their present recommendations. Mr. H. L. Eason summed up the position as follows in his memorandum on the training of medical practitioners and midwives in England:—

> In the public interest there should be an ample supply both of medical practitioners and of practising midwives, and the training in obstetrics of both classes should be of the highest possible standard. If in the provision of clinical material for their education their respective interests clash, the solution should be sought in an extension of the field from which this provision can be obtained. And the problem will be simplified by restricting as far as possible the requirements of a certificate of training as a midwife to those who intend to practise as midwives.

Mr. R. J. Johnstone, in a similar memorandum dealing with Ireland, concluded :—

Everyone who has been in close touch with the maternity work of the general practitioner must realise what a boon it will be to him and to his patients when a generation of properly trained midwives and midwifery nurses has at last replaced his present imperfectly trained assistants. If every nurse were sufficiently well trained to sterilise the patient's vulva effectively, to recognise the distinction between normal and obstructed labour, and to diagnose the termination of the first stage, there would be fewer cases of puerperal sepsis, and the obstetrician's hand would be less often forced into premature and dangerous attempts at delivery.

Sir Leslie Mackenzie contributed a memorandum setting out the position in Scotland. There is, he says, no shortage of supply, nor restriction of the number of midwife candidates. The supply is apt to exceed demand in certain areas, but the Central Midwives Board for Scotland is willing to consider proposals to guarantee a minimum income to such midwives as are unable to earn a living for the time being and whose work the local authority considers to be thoroughly competent. The Board are strongly supporting the recommendations of the Salvesen Committee on the apportioning of the duties of doctor and midwife to render them collaborators and not competitors. "The progressive integration of a real maternity service, both public and private," states Sir Leslie, "demands that the education both of medical students and of midwives shall be comprehensive and exacting. The unsolved problem of puerperal sepsis only emphasises the need for greater stringency in midwifery education."

Warning Notice on Covering : Amendment.

The present Warning Notice relating to covering excludes, together with such people as dressers, midwives, and dispensers, "skilled mechanics." It was suggested that these words would be generally held to apply to the practice of dentistry, yet any skilled dental mechanic who gave treatment, advice, or attendance, even under the immediate personal supervision of a qualified practitioner, would be liable to prosecution under the Dentists Act, 1921. It was therefore resolved :—

That the Committee recommend to the Council that the words "skilled mechanical assistants" be substituted for "skilled mechanics."

The Council adopted the resolution in their sitting on the following Friday.

Ophthalmic Benefit.

Mr. Eason, in a memorandum upon procedure in connexion with ophthalmic benefit, remarked as follows :—

It appears desirable that some warning should be addressed to ophthalmic specialists calling their attention to the fact that, though it may be proper for a general practitioner, who is a specialist on the list, in private conversation with his patients, to recommend himself, among others, as a specialist who might be consulted for the purpose, it is manifestly improper for him to suggest himself to the approved society or to any person other than his own patient, and that such conduct if reported to the Council will render him liable to be summoned before the Council on the charge of canvassing for patients.

This warning should be noted carefully by those concerned, as the principle underlying it is one that may easily be contravened inadvertently with no intention of committing the offence of canvassing.

STOBHILL HOSPITAL.—Sir John Gilmour, the Secretary of State for Scotland, has opened the new electro-medical department of Stobhill Hospital, Glasgow, which has cost £40,000. The extension includes accommodation for X ray and sunlight treatment, electrical apparatus, massage rooms, operating theatres, eye, ear, dental, and pathological departments, a mortuary, and a chapel. The hospital, which will hold 1900 beds, is the largest in Great Britain. It is controlled by the Glasgow Parish Council under the supervision of the Scottish Board of Health, but treatment is not confined to poor-law cases, patients from all parts of Scotland being admitted.

MEDICINE AND THE LAW.

The Scale of Medical Fees.

Mr. Justice McCardie's analytical mind takes him deeper than other judges are wont to go into the causes of things. A specialist's claim for fees from a patient gave him an opportunity to review the basis of medical charges last week. Two points received special examination. One was the system under which the medical profession, instead of exhibiting a fixed tariff of standard charges applicable to all cases alike, adjusts its fees to the patient's capacity to pay ; the other was the custom of charging on a mileage basis where a specialist visits a patient outside London. As will presently be seen the judge upheld the former practice but did not accept the latter in the circumstances of the particular case.

The general state of the law is fairly clear. There is seldom a definite contract in advance between practitioner and patient, but the law assumes the existence of a contract and makes it an implied term of the contract that the practitioner is to be rewarded for his services. If no definite sum has been stipulated the amount of the reward is what the court thinks reasonable. "I recognise the importance of maintaining an adequate remuneration for the medical profession," said Mr. Justice McCardie ; "in order that a man can enter that profession, it requires seven or eight years for him to be qualified and the spending of some thousands of pounds is involved." "A doctor," he added, "has to take expensive rooms and must maintain an adequate social standard ; therefore it is impossible to regard the medical profession as other than one entitled to adequate remuneration." The claim before him was that of Dr. J. H. D. Webster, of Chandos-street, Cavendish-square, who sued Miss Muriel Clifford, of Bloomsbury-square, for £103 the unpaid balance of his fees. The defendant, who had previously paid £30 of the bill, contended that the charges were excessive and unreasonable. Dr. Webster gave evidence that on 39 occasions last winter he had treated Miss Clifford for severe sciatica, the treatment including ultra-violet light application. In answer to questions from the judge as to preliminary inquiries made by doctors regarding their patients' social and financial status, he said this patient had been recommended to him by another doctor who, he assumed, had already made some kind of inquiry ; he agreed with the judge's suggestion that often, and perhaps normally, the doctor adjusts his fees according to that status ; "one always hopes," he added, "to be paid." Asked whether rich patients occasionally objected to pay at a higher rate, he agreed that they sometimes resented being charged more for treatment similar to that in other cases. "You charged Miss Clifford," asked the judge, "as you would charge a prosperous City man ?" Dr. Webster said he thought his charge to a prosperous City man might have been higher. He knew Miss Clifford had an address in Jermyn-street, and lived in a flat with two maids ; she told him she attended race meetings and lost or won as much as £60 in a day ; in view of this he thought she could afford to pay his ordinary charges. When he came to give judgment Mr. Justice McCardie said the difficulties which arose in the case would not have been caused if doctors would tell their patients in clear terms at the beginning of the treatment the scale of fees they intended to charge. He held that Dr. Webster's charges were reasonable and that he was entitled to everything except a sum of 30 guineas charged on a mileage basis.

The Mileage Basis.

Dr. Webster had on one occasion travelled from London to Eastbourne to visit Miss Clifford at her request. For this he charged 30 guineas, claiming that it was a custom of the profession that a specialist, visiting a patient out of London, was entitled to charge on a basis of a guinea per mile of the distance travelled. Dr. J. H. Humphreys, consulting X ray

physician to the American Hospital, said the charge was reasonable. In answer to the judge he said he had actually received 200 guineas for going to a patient at Newcastle. After consulting a railway guide, the judge observed that Newcastle was 266 miles from London, to which Dr. Humphreys replied that he must have misread the figures in making his charge. The judge disallowed the item of 30 guineas and substituted the figure of 26; he said that a doctor should make it clear if he is going to charge a special fee of this nature. The upshot of this decision is first that the sum claimed might have been regarded as reasonable if warning had been given; and, secondly, that the court seems to regard it as unreasonable for a specialist to charge a fee of more than four guineas for a special visit to a patient at Eastbourne—a conclusion on which the medical profession will form its own judgment. In so far as the mileage basis is put forward as a matter of custom, it must be remembered that a custom to be legally valid must comply with certain conditions. It must not only not be contrary to the public interest; it must also be definite, well known, and universal. If patients can say that they never heard of such a custom, then it can hardly be called well known; if it is pointed out that a claim is for 30 guineas and that the distance from London to Eastbourne is not exactly 30 miles, the discrepancy is an obstacle to definiteness. It would, therefore, appear better not to insist too much on the basis of custom but to rely on that of reasonableness.

As a matter of fact, as a writer has recently pointed out, the mileage basis is of respectable antiquity. In the eighth volume of "Farington's Diary" there is mention (under the entry for Oct. 25th, 1818) of a Dr. Ainslie's visit from London to a patient at Hastings. "He had 66 guineas, his fee being reckoned at a guinea a mile." It is a pity that this excellent precedent was not quoted to Mr. Justice McCardie who would have appreciated it. Travel, of course, was a different matter a century ago, but then 66 guineas purchased a great deal more than it does to-day. "Farington's Diary," by the by, contains much curious information about medical fees. He quotes a Dr. Baillie as "reckoning to get £10,000 per annum"; Astley Cooper, he believes, makes £22,000 a year, and got a fee of £1000 for operating for stone on "an elderly gentleman from Jamaica."

"*Taxing*" *Doctors' Bills.*

The uncertainty of medical fees undoubtedly leads to occasional surprises on the part of the patients where frequent periodical accounts are not rendered. Dwelling upon such occasions, "A Solicitor," writing in the *Birmingham Gazette* of Nov. 28th, makes the ingenious suggestion that doctors' bills should be taxed like those of a solicitor. A lawyer's bill, he explains, goes before an official called a Taxing Master, who disallows such items as he considers unnecessary, improper, or excessive. There is, as he points out, a fixed maximum scale for charges in many matters undertaken by solicitors, and he thinks doctors might be similarly regulated.

The legal and medical professions, in the essentially personal relationship between their members and their clients or patients, have much in common. Doctors will welcome any suggestion from solicitors for the appropriate reward of the services they render. The solicitors are in the enviable position of having had most of their fees substantially raised by order of the Lord Chancellor since the war. But the analogy of the taxation of costs seems imperfect. A successful litigant is, if his opponent is solvent, able to recover his taxed costs. But it is notorious that he is lucky if he has not to pay substantial extras to his legal adviser which are not recoverable. Occasionally the order of the court, or the agreement of the parties, is that the successful litigant gets what are known as "costs as between solicitor and client"; this means that the litigant gets the whole of his expenses paid. On other occasions, however, when he is merely awarded ordinary costs, the taxation of the lawyer's bill merely serves to prove that there is one (rather meagre) standard which the Taxing Master is officially prepared to approve as necessary and proper, and another (more generous) standard on which the solicitor actually charges his client.

The Use of Convicts for Cancer Experiments.

Dr. Norbury, medical officer of health to the Holywell Rural District Council, in a speech in support of the British Empire Cancer Campaign, is reported to have made the suggestion that condemned murderers should have the option of offering themselves for experiment. Research work, he said, is hampered for want of material; hanging a murderer is waste. The idea might not be seriously considered to-day but he predicted that posterity would be willing to give it a trial. It is elsewhere reported that the Cuban Board of National Sanitation has approved a proposal to inoculate convicts under death sentence with cancer germs for purposes of clinical study. The suggestion is apparently coupled with a time limit; if the convict agrees and submits himself, and if he survives 12 years later, what is left of him will then be set at liberty. It would, as has been pointed out, be interesting to see how public opinion reacted to the suggestion. Would it be regarded as a cruel or a humane proposal? And what is meant by "cancer germs"? The medical officers of prisons may find an increasing curiosity on the part of their patients as to the prospects of the artificial introduction of cancer.

It will be remembered that last week our Berlin correspondent reported [1] some medico-legal opinions on a proposal, emanating from Riga, to offer a reprieve to criminals who would submit to inoculation with leprosy bacilli.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Seizure of Quinine.

FOLLOWING the seizure by the Federal Government of quinine worth about £20,000 in New York warehouses, the Federal District Court in that city has entered a consent decree permanently enjoining further violations of the anti-trust laws by the interests that control the world supply of quinine. Production, distribution, and therefore the price of quinine have been absolutely controlled, it is said, by an international syndicate of Dutch, German, French, English, and American manufacturers. In the opinion of the U.S. Department of Commerce the monopoly has been "about as effective as there is anywhere." Henceforth manufacturers of quinine will be restrained from—

1. Imposing restrictions on the re-sale of quinine in the United States.
2. Hindering the shipment in, into, or from the United States of cinchona bark or quinine derivatives.
3. Participating in any arrangement for pooling or division of profits or territory with reference to sales made within the United States.
4. Discriminating between purchasers located within the United States.
5. Selling on condition that the purchaser will not deal with a competitor of the seller.

The Audiometer.

It is now about three years since the Western Electric Company produced the audiometer, a device for the measurement of auditory acuity. Essentially this consists of a gramophone from which the sound is reproduced through a telephone instead of through a horn. It is, of course, possible to attach as many earphones to the apparatus as are required to test a group of individuals all at the same time. Thus a class of, say, 40 school-children can all have their hearing tested in from 10 to 45 minutes according to

[1] THE LANCET, Dec. 8th, p. 1207.

the age and intelligence of the group. The records used in the test are made from a series of numbers transmitted by a voice that varies from a loud conversational tone to a barely audible whisper. In the last two years this device has been used increasingly in testing the hearing of children in the public schools. We have now a report [1] by Dr. Frank A. Laurer of the results of a survey of 4419 children in the schools of Syracuse, New York, where the Milbank Foundation is conducting its successful health demonstration. The total number of children found to have impaired hearing was 502, but of these 421 were in the class of "borderline" impairment. Fifty-six suffered a moderate loss of hearing and 25 a severe loss. Two hundred of these students escaped the special examination by an aurist, but the recommendations made in the case of the remaining 302 show clearly to what conditions the defects were due:—

Tonsillectomy ..	187	Medical attention for otorrhœa	33
Removal of wax ..	54	Further observation ..	15
Inflation	13		

It thus appears from this survey that rather more than 10 per cent. of the school-children had subnormal hearing and that about 80 per cent. of these were suffering from defects that were remediable. Such a result seems to justify the routine use of the audiometer.

Deaths from Heart Disease.

An interesting analysis of mortality from diseases of the heart is published in the Vital Statistics Bulletin of the Pennsylvania Department of Health. This State has the largest vital statistics experience of any State health department, since New York City is not included in the figures for New York State, whereas Philadelphia is included in the statistics of Pennsylvania. Here as elsewhere there has been a rising rate from heart diseases from 133·5 per 100,000 in 1906 to 210·6 per 100,000 in 1927. The upward trend has been marked over the whole period of 22 years. In this time the rates for endocarditis and myocarditis and for angina pectoris have doubled. "Other diseases of the heart" also show a marked increase, the only decrease being in pericarditis—from 1·4 to 1·0 per 100,000. Some of the upward trend is explained by the increasing number of older people in the State, but even the standardised rate has increased from 142 to 203. However, when the age specific death-rates are calculated it is found that in the age-groups under 30 the death-rate from heart disease has definitely decreased. The median age of death from this cause is now 66 years, or three years older than in 1906, and the most marked increase of rate is in the age-group 80 years and over. It thus appears that the increasing rate is more an evidence of survival to the age of senility than of any increase in the specific causes of heart disease.

The Eyesight of School-children.

At the recent conference in New York of the American National Society for the Prevention of Blindness the responsibility for conserving the sight of the child was placed upon the teacher. Dr. Harry B. Burns, who directs the department of hygiene in the Pittsburgh public schools, reported from 18 years' experience that parents cannot deal adequately with sight conservation. The school, he thinks, is the logical organisation to assume responsibility for the children's sight. While the ultimate technical service is that of the oculist, assisted by school physician and nurse, the immediate responsibility for vision testing must of necessity devolve upon the class-room teacher. Dr. William H. Holmes (superintendent of instruction, Mount Vernon, N.Y.) urged the consideration of proper lighting facilities in the home; architects, he said, fail to provide the means for correct illumination. Children even in play should be placed where their eyesight can develop normally under proper illumination. Dr. David E. Gillette (Department of School Health, Syracuse) condemned polished desks, and suggested that publishers should avoid glazed paper for school books.

[1] See Amer. Jour. of Public Health, November, 1928.

Medico-political Questions.

The committee on civic policy has reported to the Medical Society of New York County that the practice of fee-splitting is one of the most vexatious and persistent evils with which the society is called upon to deal. While in some instances a manifestation of economic stress, in others it is the product of commercialism and greed. A questionaire on the subject was handed to members along with their voting-papers for new officers, to be deposited unsigned in a separate ballot-box. Information was asked for as to income, as to whether or not the practitioner believed his income to be adversely affected by "dispensaries, pay-clinics, life extension institutes, and health clinics, as at present conducted," as to fee-splitting, as to whether the family doctor receives adequate pay, and as to whether he should be associated in the treatment of a case sent to a hospital by a consultant. The questionaire gives a clue to the burning medico-political problems of the moment.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are 1927 statistics of nine administrative counties:—

Name of town and estimated (R.-G.) population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and 1-5 yrs. mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Somerset .. .. (401,500)	14·4	12·5	0·71	1·49	2·4	2·1	46/18	3·8	4·0
Staffordshire .. (714,910)	19·3	11·9	0·87	1·12	3·0	1·5	80/—	6·5	3·7
Nottinghamshire (408,100) ..	18·6	11·3	0·81	1·14	2·7	1·3	69/30	3·5	3·8
East Suffolk .. (209,380)	15·8	11·9	0·73	1·48	2·0	1·4	58/24	2·4	4·2
*Cambridgeshire (70,400)	15·0	13·2	1·02	1·49	2·6	2·0	50/17	0·9	5·6
Huntingdonshire (55,880)	16·7	13·5	0·73	1·71	2·5	1·8	61/18	9·6	5·3
Holland .. .. (88,060)	18·8	12·3	0·85	1·57	2·3	1·7	64/29	5·4	2·4
Isle of Ely .. (77,660)	18·6	12·8	0·61	1·74	2·6	1·8	65/20	6·2	3·4
Rutland .. .. (18,060)	14·0	11·2	0·5	1·5	2·2	1·7	63/—	0·0	0·0

* Excluding Cambridge borough, for which see THE LANCET of June 23rd, pp. 1299–1300.
— = No information.

Somerset.

Dr. W. G. Savage expresses satisfaction with the spurt in housing activities during the last few years. Thus the houses built in the urban districts during the last three years have been 581, 974, and 1393, compared with an average of 400 for the previous four years; while the figures for the rural districts are 812, 1217, and 1442, compared with an average of 562 for the previous four years. There has been a need for houses all over the country, but some of the authorities have been active while others have not. Many of the new houses are in towns, but many are in villages and parishes, where no or few houses have been built for generations. As a rule the sites have been well chosen, the spacing adequate with good gardens, and the architectural features harmonious. Dr. Savage gives particulars of the houses built in all the districts under the five schemes of Government

aid. About 350 houses are needed to supply the natural increase of the population. Overcrowding has been relieved to some extent, and existing overcrowding is largely economic, as the housing needs of the poorest and of large families have not been met. In the long run, lower rented houses will be set free, but, in the meantime, unfit houses cannot be closed, because there are no houses at a low enough rent to suit the occupants. "Unfit" houses probably number 2000, but the returns from the districts are unreliable. Dr. Savage urges that each local authority should keep a proper record of unfit houses, and close them as occasion offers and not allow them to be occupied by a fresh tenant. During 1927 only preliminary steps were taken as regards the Housing (Rural Workers) Act, 1926. The reconditioned houses will have to meet certain requirements as to fitness for habitation before they will qualify for a grant, and these conditions have been formulated.

The scheme begun in May, 1926, for the prevention and cure of rickets is being energetically pressed, and there is found to be a good deal of rickets in the rural areas. In searching out the cases the district nurses, who in many parts of the county carry out health visiting, do preliminary work, but it falls to the county health visitors to see that the cases attend the orthopædic clinics or obtain medical advice, either privately or through the county staff. Most of the cases come under the latter category. The form of cod-liver oil found most suitable is "ostelin" and malt extract. This preparation contains the equivalent of 50 per cent. cod-liver oil, and therefore has an advantage over the ordinary malt and oil preparations, which may contain only 15 per cent. of oil. Artificial light treatment is at present available at three centres, and is to be extended to more. The cases under treatment numbered 263, of whom three died and nine left the county; of the remainder, 28·3 per cent. were cured, 13·2 per cent. practically cured, 46·8 per cent. improved but under treatment, and 11·7 per cent. with no visible improvement or needing transfer to the orthopædic clinic for definite deformity. Many of those who failed to improve are irregular attenders. In order to prevent rickets the health visitors and district nurses make special efforts to deal with unsatisfactory diet and home conditions. An insufficient use of sunlight and exercise is quite common, even in a rural county like Somerset. Dr. Savage is satisfied that this anti-rickets scheme is doing a great deal of good at a very low cost.

The infant mortality-rate was equal to the lowest recorded. There were 35 notifications of typhoid and eight deaths; 12 of the cases occurred in Wells asylum, and were traced to a food-handling carrier who came from Yorkshire. There were 20 cases of encephalitis lethargica and 13 deaths. An extensive outbreak of food poisoning caused about 300 cases, with one fatality—a child of 6½ years. The outbreak was traced to ice-cream infected with *Bacillus aertrycke*, but the source of the infecting bacilli remained a mystery.

Dr. L. J. Short, the tuberculosis officer, claims that the reduction achieved in the tuberculosis mortality has brought Somerset into the best position of all the areas in England with a population exceeding 300,000, whether urban or county. The medical practitioners make great use of the services of the tuberculosis officers. The deaths from tubercle numbered 287, and the new cases examined at the dispensaries 1682. Of the latter 534 were classed as pulmonary tuberculosis, of whom 398 were T.B. negative; 83 were classed as non-pulmonary tuberculosis; 947 as not tuberculous; and 118 as doubtful. The length of stay at Quantock sanatorium is considerably above the average, but the results continue to be exceptionally good. Dr. Savage reports that no steps have been taken to provide veterinary inspection of cows, but that of 230 mixed milk samples taken in the county five were tuberculous, and that three complaints of tuberculous milk were received from outside. As the result of following up five cows with tuberculosis of the udder and two cows with advanced tuberculosis were found and slaughtered, while in the eighth case the infected animal could not be traced.

Staffordshire.

Dr. W. D. Carruthers reports that 58 "outside" complaints of tuberculous milk were received, and that as a result 53 cows were slaughtered under the Order. In addition, 32 samples of milk were found by the county inspectors to be tuberculous, and in consequence 27 cows were slaughtered. Five complaints were made to outside authorities of tuberculous milk sent in to the county, and in four of these instances the investigations proved negative. A special examination of milk samples for cleanliness was carried out between June 1st, 1927, and Feb. 29th, 1928. Of 622 samples, 331 proved to be clean, 291 to be unsatisfactory, and 45 to contain tubercle bacilli. It was noticed that the cleanliness of the samples improved in the course of the investigation. At the end of 1927 the Ministry had granted to producers in the county one licence for Certified Milk and three for Grade A (T.T.), whilst the county council has issued 22 licences for Grade A milk. Of these graded milks 168 samples were taken, of which 138 were satisfactory, 30 were not, and two contained tubercle bacilli. It is not mentioned to which grade the two tuberculous samples belonged. The work of the county bacteriological laboratory shows great increase, and included the investigation of a *B. aertrycke* food poisoning outbreak. There were 26 notifications of encephalitis lethargica and 22 deaths.

The housing position shows an improvement. There is more building by private enterprise, and it is becoming more possible to secure the renovation of existing houses.

The county council administers the Midwives Acts for the whole population and health visiting for a population of 307,158. The post-certificate course of training for practising midwives has been continued and was attended by five midwives in private practice and six midwives from local nursing associations. The course lasts a fortnight, and each practising midwife will be given an opportunity of attending every four years. There are 26 combined school clinics and infant welfare centres, and at 11 of the larger centres antenatal clinics are held. The use of these clinics by the midwives is being encouraged, and the post-certificate course is helpful in this direction. The county council has no maternity home, but makes use of six homes in various parts of the county to which complicated cases or cases needing antenatal treatment can be sent. The services of the school ophthalmic surgeon are available for children under five suffering from squint, and 11 such cases received attention. Among 166 notified cases of ophthalmia neonatorum there were three cases of impaired vision, but the extent of the impairment is not mentioned.

Nottinghamshire.

Dr. T. E. Holmes reports that there were 446 notifications of small-pox in urban and 56 in rural districts, with no deaths. There was a decided increase in enteric fever owing to two milk-borne epidemics. In all there were 64 notifications and four deaths. The first epidemic occurred in the Newark neighbourhood between the middle of June and the beginning of September, and caused 39 cases, all of the paratyphoid B type. The original case was the dairyman's son, and it is not known how he became infected. The first case of the second outbreak in the East Retford rural district was thought to be a case of food poisoning. She died after nine days' illness. Her husband was an unregistered dairy farmer. Three weeks later five patients and two members of the staff of the Gringley children's hospital supplied by him with milk were attacked by paratyphoid B, and the remaining patients and staff were inoculated. Two other customers in the village were also attacked. The source of the original infection was not traced, but a pond used by the cattle polluted with house drainage was found to contain organisms of the

salmonella group and many streptococci. The cattle were dirty and ill-kept, and it was thought the milk might have been infected through this polluted pond. Dr. Holmes reports that the registration of milk producers and vendors in the county is very incomplete.

The appointment of a whole-time rivers inspector has proved of immense benefit in preventing the pollution of rivers and streams. Another hopeful feature is that the various trades are taking a real interest in the purification of wastes. Both the beet-sugar industry and the gas engineers have formed a research committee, and a dyeworks and a colliery have installed apparatus for dealing with their wastes.

The Notts Nursing Federation have appointed 12 new district nurse-midwives for each of whom they received a grant of £30. Other nurses have been appointed to supply the needs of the new colliery villages. The county council have increased the number of health visitors from 20 to 25, but find a difficulty in filling the new appointments, and there were still three vacancies at the end of the year.

East Suffolk.

Dr. Bernard Wood-White reports that the problem of the pollution of the river Gipping by the waste of the Stowmarket silk works is still unsolved, and that attention is being drawn to the condition of the Stour, owing to the intention to use it for water-supply. During the first six months of the operation of the Housing (Rural Workers) Act 35 applications were received. Two were refused, and 19 grants were promised, totalling £788. With regard to "ribbon" building, Dr. Wood-White thinks that in a short time the traffic on the main roads will increase to such an extent that it will become the height of folly to build houses alongside them. The arterial roads should proceed as far as possible through uninhabited country, and avoid towns and villages for the sake of the quiet of the inhabitants and for the convenience of the traffic.

During 1927 six samples of milk examined at the county laboratory were found to contain tubercle bacilli. Four were complaints from Lowestoft, and two were from a group of 33 routine samples taken by arrangement with the district councils. In three cases tuberculous cows were found and slaughtered, but in the other three the biological tests could not be carried out owing to the shortage of guinea-pigs. There are no licences in the county as yet for Certified or Grade A (T.T.) milk.

Dr. Wood-White has extended his investigation of the economic loss caused by various diseases. During 1927 the following deaths occurred: heart disease, 385; cancer, 310; bronchitis, 172; tuberculosis, 153; influenza, 130. When the age value of the lives lost is considered, the comparative damage to the community from these deaths was in the following order—tuberculosis, 2827; cancer, 2702; heart disease, 1839; influenza, 1147; and bronchitis, 431. Dr. Wood-White also finds that the East Suffolk deaths from heart disease occur at higher ages than in the county boroughs and the rest of England and Wales, and he gives reasons for his opinion that acute rheumatism is less common in East Suffolk than in the rest of the country.

Cambridgeshire.

Dr. Frank Robinson reports that the need for a maternity hospital will be somewhat relieved by the opening of an eight-bed ward at Addenbrooke's Hospital, but it is hoped that ultimately a maternity home will be provided in the grounds of the hospital, supported by grants from both town and county, at which an efficient antenatal clinic will be established. The county council granted three nursing scholarships of £75 each during the year, and since 1913 it has, in this way, facilitated the training of 37 nurse-midwives. The county council also subsidises the County Nursing Association, and there are now only 26 rural parishes, with a population of 7700, without a nursing service. The first clean milk competition was held in the six rural districts which constitute the administrative county outside the borough of Cambridge. Twenty-one herds, containing 596 cows, were entered. Of the 134 samples taken, 48 per cent. reached the standard of Certified and 68 per cent. the standard of Grade A milk. The judge commented that the competition showed that it was possible to train old milkers in modern methods. It is now becoming feasible to close unfit houses. Use was made of the Housing (Rural Workers) Act for two cottages only, and the county council sanctioned loans to the extent of £4650 under the Small Dwellings Act.

Huntingdonshire.

Dr. C. B. Moss-Blundell would like to see more stringent measures taken to deal with tramps, seeing that, in addition to damaging property by fires and pilfering, they act as spreaders of disease. The needs of the tuberculosis dispensary include a branch in the north of the county and a more systematical examination of contacts. The total deaths attributed to tuberculosis were 41, and the contacts examined numbered 67, of whom 20 were tuberculous, 10 doubtful, and 37 non-tuberculous. There were four notifications of, and four deaths from, encephalitis lethargica.

Holland.

Dr. H. C. Jennings's report has as a frontispiece a photograph of the Clean Milk Exhibit shown by the health department at the County Agricultural Show in June. Additions to the activities of the health department include a new branch tuberculosis dispensary at Donington, an infant welfare centre at Crowland, and the establishment of a county laboratory. There were six notifications of encephalitis lethargica, and five ended fatally. The notification of tuberculosis is unsatisfactorily carried out. The Holland Sanatorium (24 beds) is chiefly used for advanced cases, but the council also provides treatment in out-county sanatoriums (20 beds). In this county, where distances from the nearest medical practitioner may be great, the problem of the handy woman presents special difficulties. The solution lies, says Dr. Jennings, in forming many nursing associations with resident midwives. The necessary equipment has not yet been provided for the conduct of antenatal work at the welfare centres. There were only three applications under the Housing (Rural Workers) Act, of which two were withdrawn and one refused. There is a considerable amount of poor-law hospital accommodation in the county available for use on a voluntary basis.

Isle of Ely.

Dr. J. Pixton Walker reports that the new health offices were opened in October. He states that there is great difficulty in finding institutions willing to take mentally deficient cases from his area. There is a proposition for the purchase of a hall for the county of Norfolk for this purpose, and Dr. Walker hopes that his county will associate itself with this scheme.

Rutland.

Dr. Christopher Rolleston welcomes the Housing (Rural Workers) Act, 1926, as one of the most beneficent measures ever adopted. During the first six months of its operation four houses have been converted into satisfactory dwellings, but the benefits of the Act are as yet insufficiently known. Veterinary inspection of cattle is now in active operation in Rutland. Of the total deaths one-half were of persons over 65, and one-quarter of persons over 75. Dr. Rolleston points out that a large portion of the apparent increase in heart disease is due to the greater age at death and the fashion of certifying from "heart disease" rather than from "old age." He thinks also that the decline in the mortality from cancer of the tongue is partly due to the decrease in syphilis and partly to better attention being given to the teeth. He quotes approvingly the recent resolution of the British Medical Association with regard to periodical medical and dental examination. The nursing service has been extended, and there are now only three villages lacking it. Rutland comes

out well for the high proportion of contacts examined at the tuberculosis dispensary, and also for efficient ascertainment of mentally defective persons.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 1ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 189 (last week 199); scarlet fever, 2777; diphtheria, 1420; enteric fever, 34; pneumonia, 1099; puerperal fever, 49; puerperal pyrexia, 126; cerebro-spinal fever, 12; acute poliomyelitis, 6; acute polio-encephalitis, 1; encephalitis lethargica, 22; dysentery, 6; ophthalmia neonatorum, 76. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified in the following 16 counties:—London, 4; Chester, 4; Derby, 19; Durham, 33; Essex, 5; Lancaster, 40; Leicester, 2; Northampton, 1; Northumberland, 14; Nottingham, 8; Soke of Peterborough, 3; Stafford, 8; Warwick, 1; Yorks, West Riding, 24; Glamorgan, 13; Monmouth, 10.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on Dec. 4th-5th was as follows:—Small-pox, under treatment 20, under observation 2; scarlet fever, 2548; diphtheria, 2096; enteric fever, 16; measles, 65; whooping-cough, 352; puerperal fever, 14 (plus 8 babies); encephalitis lethargica, 75; poliomyelitis, 4; "other diseases," 12. At St. Margaret's Hospital there were 8 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (0) from enteric fever, 19 (0) from measles, 6 (1) from scarlet fever, 31 (10) from whooping-cough, 34 (5) from diphtheria, 55 (12) from diarrhœa and enteritis under two years, and 56 (11) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London were reported from Reading, Birmingham, and Manchester. Newcastle-on-Tyne reported 6 fatal cases of measles, Liverpool 6, and Stockton-on-Tees 2. Fatal cases of whooping-cough were reported—3 each from Liverpool and Manchester. Liverpool also reported 3 deaths from diphtheria. Diarrhœa claimed 5 deaths each at Liverpool and Manchester, 4 at Middlesbrough, 3 each at Leeds and Hull. Deaths from influenza did not exceed 2 anywhere except Manchester 3 (and Glasgow 5).

The number of stillbirths registered during the week in the great towns was 296 (corresponding to a rate of 43 per thousand births), including 47 in London.

The Services.

THE ARMY MEDICAL ADVISORY BOARD AND THE ARMY MEDICAL DIRECTORATE CONSULTATIVE COMMITTEE.

IT has been decided to reconstitute the Army Medical Advisory Board, with the Director-General, Army Medical Services, as President, the members of the Board consisting of four civilian members of the medical profession and the President of the Medical Board, India Office (ex officio), when matters concerning India are under discussion. The secretary will be the deputy assistant Director-General of A.M.D. 1. The following are the terms of reference: To advise the Secretary of State for War on any question of policy, in connexion with Army Medical Services, on which he may desire to consult them. The four civilian members will be appointed by the Secretary of State. In the event of a vacancy occurring, a fresh appointment will be made by the Secretary of State on the recommendation of the remaining members of the Board. The ordinary meetings of the Board will be presided over by a chairman—appointed by the Secretary of State from among the civilian members of the Board and nominated by the members in consultation with the D.G.A.M.S. The D.G.A.M.S., as President, may attend any meeting of the Board if, on account of the special problems to be considered, or for any other reason, he desires to do so, and will then take the chair. The Board will meet three times a year, but the civilian members may arrange additional meetings on notifying the D.G.A.M.S. through the Chairman. After each meeting the conclusions of the Board will be reported to the D.G.A.M.S. and, after further consultation if necessary, by him to the Secretary of State. The Secretary of State will see all or any of the civilian members of the Board whenever he desires to do so, and the Board as a whole will have the right, after informing the D.G.A.M.S., of access to the Secretary of State.

The following have been appointed to the Board: President: Lieut.-General Sir Matthew H. G. Fell. Chairman: Hon. Major-General Sir Berkeley G. A. Moynihan, Bt. Members: Hon. Major-General Lord Dawson of Penn, Hon. Major-General Sir Cuthbert Wallace, Prof. D. P. D. Wilkie. Secretary: Major C. M. Drew, R.A.M.C.

It has been decided to appoint an ARMY MEDICAL DIRECTORATE CONSULTATIVE COMMITTEE constituted as follows: The Director-General, Army Medical Services, chairman; the Deputy Director-General, Army Medical Services, vice-chairman; six civilian members of the medical profession who hold instructional or other appointments at University centres or medical schools, and one civilian member of the Chemical Warfare Committee as members. The Secretary will be the Deputy Assistant Director-General of A.M.D.1. The following are the terms of reference: To advise the Director-General, Army Medical Services, as to: (*a*) The supply of candidates for the Regular R.A.M.C. and its reserves. (*b*) Post-graduate and other professional courses of instruction for R.A.M.C. officers. (*c*) Such administrative or professional questions as may from time to time be referred to it. The civilian members will be appointed by the Secretary of State, on the nomination of the D.G.A.M.S. They will normally serve for three years. Full meetings of the Committee will be held twice yearly, or as often as may be required, at the War Office. Other meetings may be held elsewhere as required. The chairman or vice-chairman and two members of the Committee will form a quorum for the transaction of business. The Secretary of State has approved the following appointments to the Committee: Chairman: Lieut.-General Sir Matthew H. G. Fell. Vice-chairman: Major-General H. B. Fawcus. Members: Prof. J. Barcroft, Lieut.-Colonel Sir Robert A. Bolam, Colonel Sir E. Farquhar Buzzard, Colonel T. R. Elliott, Captain J. Fraser, Colonel G. E. Gask, and Colonel A. E. Webb Johnson. Secretary: Major C. M. Drew.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments are notified:—Surg. Comdrs.: H. D. Drennan to *Victory*, for Portsmouth Dockyard; C. Ross to *Vivid*, for R.N. Barracks, Devonport; F. J. Gowans to *Victory*, for Haslar Hosp.; J. A. Maxwell to *London*; A. B. Clark to *Revenge*; H. E. R. Stephens to *Pembroke*, for R.M. Infirmary, Deal; H. R. B. Hull to *Victory*, for R.N. Hospl., Haslar; R. H. McGiffin to *Nelson*; T. R. L. Jones to *Emperor of India*; and J. G. Danson to *President*, for three months' post-graduate course. Surg. Lts.: A. E. Kingston to *Marlborough*; T. G. B. Drawford to *Dryad*; T. L. Cleave to *Argus*; L. J. Corbett to *Queen Elizabeth*; A. S. Nicol to *Defiance*; J. K. G. Way to *Dartmouth*; W. J. Doody to *Birmingham*; and J. Mitchell to *Cleopatra*.

ROYAL ARMY MEDICAL CORPS.

Col. G. J. A. Ormsby, late R.A.M.C., retires on retd. pay.

Lt.-Col. FitzG. G. Fitzgerald, from R.A.M.C., to be Col., vice Col. G. J. A. Ormsby, to retd. pay.

The undermentioned Lt.-Cols. retire on retd. pay: Bt. Cols. A. E. Hamerton and J. Powell (and is granted the rank of Col.), and W. Bennett (and is granted the rank of Col.).

Maj. P. Power to be Lt.-Col., vice Lt.-Col. FitzG. G. Fitzgerald, promoted.

ARMY RESERVE OF OFFICERS.

Lt.-Col. A. B. Smallman, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Capt. G. Marshall, from Supp. Res. of Off., R.A.M.C., to be Capt.

Lt. W. F. Roper from Reg. Army Res. of Off., R.A., to be Lt., retaining his present seniority.

TERRITORIAL ARMY.

Col. J. H. Hunter resigns his commn. and retains his rank with permission to wear the prescribed uniform.

Lt.-Col. (Bt. Col.) A. R. Moodie, from Gen. List, R.A.M.C., T.A., to be Col., and to be A.D.M.S. 51st (Highland) Div.

Lt. R. McD. Cairns to be Capt.

Supernumerary for service with O.T.C.: Lt.-Col. F. A. E. Crew, Univ. Contgt., Sen. Div., O.T.C., to be Bt. Col.

INDIAN MEDICAL SERVICE.

To be Capt.: J. Smith.

To be Lts.: Makhan Singh and Marinho De Azavedo.

To be Second Lt.: J. Mackie.

Correspondence.

"Audi alteram partem."

THE MODE OF EXPRESSING THE DIFFERENTIAL LEUCOCYTE COUNT.

To the Editor of THE LANCET.

SIR,—I have long marvelled that so many pathologists are content to report their differential leucocyte counts merely in percentage form, and that clinicians are willing to put up with this. For nearly 30 years I have been accustomed to impress upon the students at St. Bartholomew's Hospital that, if they would understand the meaning of such counts, they must apply the percentage figures to the total count, and learn to think in terms of absolute figures of each kind of leucocyte per c.mm. of blood.

The recipient of a mere percentage count must, even if unconsciously, go through some such mental process before he can grasp the significance of the figures. When he is told that a patient has 60 per cent. of lymphocytes, he must necessarily pause and think for a few moments whether the increase is real or only apparent. Whereas if he is told that there are 2000 or 6000 lymphocytes per c.mm., he should apprehend the facts at a glance. In ordinary life we should not tolerate this roundabout mode of stating facts.

Not long ago you published in your series on the Clinical Interpretation of Aids to Diagnosis some excellent articles by Dr. S. C. Dyke on the interpretation of blood counts, and it is the article in your issue of Nov. 10th last which has moved me to these remarks, because it contains no reference to the direct way of expressing results. Dr. Dyke is very well aware of the fallacies which may lie on the face of a mere percentage statement; he felt obliged to draw attention to them here and there, and to explain that "relative lymphocytosis" practically always meant polymorphonuclear leucopenia. Yet it never seems to have occurred to him to tell his readers that by a plain statement of actual numbers all misconceptions could be avoided. When that is done we shall cease to hear the fatuous term "relative lymphocytosis"—fatuous because in so far as it is really relative it is not lymphocytosis. Dr. Dyke will then tell us, correctly, that eosinophilia means an increase in the total circulating leucocytes, not that it is an increase in their percentage number. The clinician himself will find it less trouble, in the long run, to learn once for all the normal numbers of each kind of leucocyte per c.mm., than to do sums in his head whenever he receives a percentage statement.

I am, Sir, yours faithfully,

Highgate, Dec. 8th, 1928. F. W. ANDREWES.

A SIMPLE MECHANICAL AID TO LABOURED RESPIRATION.

To the Editor of THE LANCET.

SIR,—I should like to call the attention of my colleagues to a simple expedient for easing respiration in cases of dyspnœa. Anyone who has tried to breathe deeply when lying on his back will have noticed a certain inhibition at the end of inspiratory effort. If now the experimenter takes a towel folded to about a handbreadth, or any similar broad soft girdle, lays it against the small of his back, brings the two free ends forwards, and draws upon them so as to give support to the back, he will notice that his breathing becomes easier and the difficulty at the end of inspiration is removed. Obviously this result is likely to be better when the manipulation is made by a third person. The simple manœuvre produces some alteration in the circulation with a certain definite relief to the right heart. It should find its use in many of the cases of respiratory or circulatory disturbance, whether of functional and organic nature, which are seen in private work. The small of the back may also be supported by some arrangement in the bed, so that the effect can be kept up for a longer time, but its continuous application will only seldom be necessary. Intermittence several times a day seems to be advisable, and this should be gradual, not sudden. In pulmonary cases the pull on the side of the affected lung should be carefully controlled, especially if there is pleural effusion. That this owes its value not solely to suggestion has been shown by myself and my colleagues in a series of cases, but what exactly is the mechanism must be determined by exact experiment.

I am, Sir, yours faithfully,

Vienna, Dec. 3rd, 1928. BERTHOLD BEER.

ULTRA-VIOLET LIGHT AND CANCER.

To the Editor of THE LANCET.

SIR,—In reply to the letter of Dr. M. Weinbren in your issue of Dec. 8th:—

1. The literature cited from Unna (1896) to Colquhoun (1927) shows that clinicians have with increasing precision incriminated first exposure to the weather, then prolonged exposure to sunlight, and finally therapeutic exposure to the mercury-vapour lamp in the production of certain precancerous and cancerous lesions.

2. A mercury-vapour lamp was not used to prove the effect of sunlight.

3. There was no relation between ulceration and the subsequent growth. The growth occurred on skin which either appeared normal or atrophic.

4. There was evidence that a slight degree of tolerance was acquired.

5 and 6. Experiments are already being carried out on the lines suggested.

7 and 8. Experiments with a thermophile show that under the experimental conditions used the rise in temperature is not greater than 5° C. Exposure of mice to a considerably higher temperature than this for eight months has up to the present failed to induce cancer.—I am, Sir, yours faithfully,

G. M. FINDLAY.

Imperial Cancer Research Fund, Queen-square, W.C., Dec. 8th, 1928.

CHRONIC SPASMODIC AFFECTIONS OF THE COLON.

To the Editor of THE LANCET.

SIR,—In Dr. Ryle's instructive paper mention was made of a few cases in which rectal pain was described. I have notes of two such, possibly worthy of publication. Both were males of lean appearance, intelligent, and not neurotic, whose symptoms were closely similar, and first noticed shortly after puberty. As exciting causes of pain were mentioned constipation, cold, and coitus. As regards the first of these, I incline to the belief that the hard, constipated motion resulted from the attack, for neither patient suffered normally in this manner, and inability to evacuate invariably followed, rather than preceded, the spasm. Sitting on a cold or hard seat was a potent exciting factor, but pain immediately following on the completion of coition was the symptom which eventually led both to seek advice.

In one, whom I examined in an attack, I found a hard, tender, and contracted colon in the left iliac fossa and, on introducing the finger into the rectum, great resistance was met owing to a similar spastic condition there. A second finger was introduced and lateral pressure exerted. The first result was aggravation of the pain which suddenly gave place to complete comfort coincidentally with relaxation of the affected segment. It is of interest to note in this connexion that the patient had discovered that a similar action on his part was the only certain means of abolishing the spasm. The pain itself was likened

to severe toothache, rapidly rising to its maximal intensity, and located deep to the sacrum and in the left iliac fossa. Its severity was described as almost unbearable, but it rarely lasted longer than ten minutes, and then disappeared completely in 30 seconds.—I am, Sir, yours faithfully,

London, W., Dec. 8th, 1928. A. H. DOUTHWAITE.

To the Editor of THE LANCET.

SIR,—In two previous publications (which have apparently escaped the notice of Dr. Ryle) I described the spastic conditions of the colon, accompanied or not by myxorrhœa, as syndromes of hypertonus of the parasympathetic centra of the colon. There are two distinct parasympathetic centra for the colon. The lower represented by a column of parasympathetic cells, situated in the first four segments of the sacral medulla, gives rise to the nervus pelvicus, and through it innervates the left colon. The superior centre is in the nucleus of the vagus itself and innervates the right colon, that is the ascending and the greatest part of the transverse. Right and left colon are two distinct organs, with distinct functions, a different embryological origin (the left colon derived from the hind gut, and the right colon from the mid-gut), and a separate innervation. These colon parasympathetic centra have intimate connexions with the central nervous system and with the cortex itself, and this explains the central nervous and even the cortical influences.

The over-stimulation of the colon parasympathetic centra is due: (*a*) to humeral or endocrinic factors acting on these centra; (*b*) to abnormal nervous impulses coming from the diseased colon itself—cancer or colitis; (*c*) to abnormal nervous impulses coming from any other diseased organ; (*d*) to abnormal nervous impulses coming from the central nervous system and therefore often from cortico-psychical disturbances.

For the accurate diagnosis of conditions of spastic colon, a thorough understanding of this mechanism is absolutely necessary, and therefore a precise knowledge of visceral neurology. I avail myself of this opportunity to plead for a rapid re-edition of the standard work on Visceral Neurology, Langley's "Autonomic Nervous System," which, unfortunately for the students of internal diseases, has been for a long time out of print.

I am, Sir, yours faithfully,

Wimpole-street, W., Dec. 7th. A. P. CAWADIAS.

THE RODS AND CONES.

To the Editor of THE LANCET.

SIR,—An annotation under this heading in your last issue contains a comment on my theory of vision. When I propounded this theory at two international congresses not only was there no dissent but the most emphatic approval. All the facts point to the conclusion that vision takes place by stimulation of the cones of the retina through photo-chemical decomposition of the liquid surrounding them which is sensitised by the visual purple. The rods are not percipient elements, but control the visual purple. Helmholtz stated that there was no evidence that the rods were percipient elements. This theory explains numerous facts which are otherwise inexplicable, such, for example, as the change in position in the field of vision of after-images on movement of the eye. Two after-images may combine into one, or a red after-image may go right through a green one. This proves conclusively that the stimulus is liquid.

Apart from the numerous facts against the duplicity theory, which supposes that the rods are percipient elements for perception in a dim light, it will be found that it is supported almost entirely by misstatements—namely: (1) that certain animals have only cones and others have only rods; (2) that the periphery of the retina is colour-blind; (3) that the eye is totally colour-blind in dark adaptation; (4) that the Purkinje phenomenon and the recurrent image are not found with the fovea. With regard to these I offer the following criticisms.

1. Though I have examined numerous collections I have never been able to find any animal with only rods or only cones, neither have I found anyone who has seen such a retina. The tortoise is the most quoted; it is stated to have only cones. The rods and cones in the retina of the tortoise are as clearly defined and distinct as in the human retina.

2. The periphery of the retina is not colour-blind when colours of sufficient intensity are used. The reader can test this for himself with a doctor's red lamp. He will find he can see it as red to the extreme periphery.

3. In dark adaptation the eye is not totally colour-blind. Further, there is no scotoma or blind area corresponding to the rod-free portion of the macula which is equal to a visual angle of about three degrees.

4. The Purkinje phenomena and recurrent image are found with the fovea. Hess showed not only that the recurrent image was found with the fovea, but also that it was bent outwards at this region as it would be if the visual purple had to flow into the fovea.—I am, Sir, yours faithfully,

London, Dec. 8th, 1928. F. W. EDRIDGE-GREEN.

SMOKELESS FUEL AND PUBLIC HEALTH.

To the Editor of THE LANCET.

SIR,—A letter under the above heading appears in your issue of this week. Besides being of great benefit for public health, low temperature carbonisation of coal should, if carried out to the extent necessary, bring at least some prosperity to the mining areas. With regard to the efficiency of it, I can speak from experience, as for the past six months I have had no coal in my house, and have been burning a fuel prepared by low temperature carbonisation, and with great success. It is as easy to light as the best coal, gives a hot and bright fire, no trouble with the flues, and a hot oven. In fact, since using it, we have had a far better cooking oven than with coal.

We are a conservative nation, and it takes a good deal to alter our ideas, and it is so with the use of coal; but once the process gets into full swing and the fuel is readily obtainable at a reasonable price, no one who has given low carbonisation fuel a fair trial will want to return to the use of raw coal.

I am, Sir, yours faithfully,

F. L. NICHOLLS.

Fulbourn, near Cambridge, Dec. 8th, 1928.

A TUDOR ACT OF INDEMNITY FOR UNQUALIFIED PRACTICE.

To the Editor of THE LANCET.

SIR,—Mr. Fred Bullock has given good reason for the sudden attack on the surgeons as a body by showing that it was in some measure due to the unwise exercise of their jurisdiction over unlicensed practisers of surgery. He has also given the correct meaning of certain mediæval medical terms mentioned in the Act. By the way, is the Romney document a copy of the Statute, or is it a Proclamation? I ask for information. But there are other factors which give the subject a wider interest—e.g., the principles which guided Henry towards the regulation of the medical profession. Educated for the Catholic hierarchy when, by the solicitation of his ministers, he was urged in the third year of his reign to regularise the profession of physic he gave to the Church the dominating power. By the Act (3 Henry VIII., c. 11) he ordained that no person within the City of London and seven miles should take upon himself to practise as a physician or surgeon except he be first examined, approved, and

admitted by the Bishop of London or Dean of St. Paul's calling to him four doctors of physic, and for surgery other expert persons in that faculty. Outside the City and environs similar powers were given to the bishop of each diocese or his vicar-general, in like manner calling to them expert persons; the privileges of Oxford and Cambridge Universities being safeguarded. Six years later (1518) at Wolsey's instigation, persuaded thereto by Linacre, Henry founded the College of Physicians by Royal Charter, whereby the power given to the Church by the previous Act was transferred, *so far as the practice of physic in London was concerned*, to the College. This charter was confirmed by Act of Parliament and enlarged in the following, among other, particulars. In the dioceses outside London it had been found difficult to procure men able sufficiently to examine candidates, and consequently it was enacted that no person should be allowed to practise physic throughout England, without examination and approval of the College. The Bishop of London, as well as the others in their respective dioceses, continued to license in surgery, but in London the practice had proved unsatisfactory. The surgeons were few, they were for the most part illiterate, and if we are to believe the preamble to the Act (34 Henry VIII., c. 8) they were grasping and unscrupulous.

Physic had been dealt with to Henry's satisfaction; for the good of his people his attention was drawn to the insufficiency of surgical knowledge. There were at this time two several and distinct companies of surgeons practising surgery in London, one large and influential, the Company of Barbers incorporated by Edward IV., the other, the Company of Surgeons, small, needy, and not incorporated. For the better control, exercise, and knowledge of surgery Henry deemed it expedient that these should be joined together as the United Company of Barbers and Surgeons of London (1540). By their charter they were empowered to govern the practice of barbery and surgery in London; the barbers were henceforth restricted to barbery—i.e., washing, shaving, and the drawing of teeth, and were forbidden the letting of blood or any other thing belonging to surgery; the surgeons were similarly forbidden to practise barbery.

As Mr. Bullock shows, the surgeons became arrogant, making unreasonable use of their monopoly by prosecuting those who had ministered to the wants of their neighbours without gain. To mitigate the rapacity of the approved surgeons who, "minding only their own lucres and nothing the profit of the diseased or patient, will do no cure without knowing that they will be rewarded with a greater sum or reward than the cure extendeth unto," the Act (34 & 35 Henry VIII., c. 8) took its place upon the Statute Book. In it the right was given to any person with knowledge of barbery, &c., to use ointments and plaisters to any *outward* sore, swelling, or disease, and to administer drinks for the stone and strangury, or agues, without penalty, any other Act to the contrary notwithstanding. The internal administration of medicine for all and every other disease came within the monopoly of the physician, himself entitled to practise surgery as well as physic. The Act of 1542–43 has been called "The Quack's Charter"; it is still unrepealed.

When Henry threw off the domination of Rome he recognised that, as it had been the custom of the Popes, through their legates, to confer extra-territorial degrees in theology, law, and physic, unless he provided for the continuation of the ecclesiastical prerogative, appeals would be made to the Roman Pontiff for such degrees. He therefore by Act of Parliament ordained that the Archbishop of Canterbury should have the power to grant certain faculties; these became known as the Lambeth degrees, which are still bestowed upon chosen candidates under this Act. But the M.D. Lambeth does not now of itself confer the right to practise medicine.

I am, Sir, yours faithfully,

GEORGE C. PEACHEY.

Randolph-crescent, W., Dec. 1st, 1928.

WHAT IS A BAD RADIOGRAM?

To the Editor of THE LANCET.

SIR,—I have read with interest the leading article in your issue of Nov. 24th entitled What is a Good Radiogram? and I agree with its assertions. At the same time it does not quite define the good radiogram. May I help by trying to define the bad radiogram?

A bad radiogram I would define as one which does not render the viscus it is supposed to portray to full advantage. It is not sharp or clear. It may be ill-defined owing to over or under exposure, over or under development, or one of several combinations of the above. All these factors may be correct, but the accelerating screen so faulty as to render the negative poor. The greatest of all faults is that the bad radiogram is taken, whilst the good one is made. By "taken" I understand that a film is placed on one side of the patient, and exposed to X rays, showing on it whatever presents itself at the time, and as it lies in the given position. On the other hand, the word "made" signifies that steps have been taken to make the film of diagnostic value, and that the correct time is chosen to render a given viscus at a stage when it is best filled. It is then to be shown on a "cleared deck," or so that superimposing coils of bowel are dispersed by angulation, gravity, or pressure by inopaque object, during the exposure, to reveal the part one wishes to show; or again, efforts are made to bring movable parts out of the pelvis by manipulation, then pinned down during the exposure, and thus the diagnostic value of a radiogram is enhanced. The original lie of the same viscus can be expressed in a statement, for instance, "cæcum, terminal ileum and appendix huddled up in pelvis."

And, secondly, a radiographic report may be successfully executed, and yet the diagnosis may be missed owing to faulty judgment. For this reason I feel guilty of neglect in every negative X ray report issued—guilty of errors of omission and too fixed technique, omission to observe carefully or demonstrate each viscus in many angles, omission to observe or demonstrate the site of each viscus in turn soon after clearance, to look for opaque spots which when found can be followed up and placed. Want of elasticity in the times of investigation can be the cause of bad radiographic reports, for instance, an appendix may be shown partly filled at eight hours, partly empty at 24, yet at intervening stages it would have presented full. Such an error of judgment produces two misleading radiograms.

Finally, I would like to say that you can put heads together by the score over a well-executed negative radiogram, only to waste their time, because it is faulty in judgment—when (say) 10 degrees of rotation would have revealed the evidence of a gross lesion.

I am, Sir, yours faithfully,

O. A. MARXER.

Ruthin Castle, North Wales, Dec. 3rd, 1928.

ROYAL NORTHERN GROUP OF HOSPITALS. — This group held a festival dinner on Dec. 5th at the Savoy Hotel, with the object of collecting £10,642 to complete the sum of £35,000, which an anonymous donor has promised to double when it is attained, in order to erect a block of pay-beds. Lord Bearsted, who took the chair, proposed "Success to the Hospital." He explained the position and surveyed the work of the Royal Northern Hospital, where the new block will be erected. The Marquess of Northampton appealed to local employers to encourage their workers to use the Contributors' Certificates scheme, by which receipts for donations are accepted as cash for treatment within ten years of their issue. Major Sir Archibald Boyd-Carpenter, proposing "The Voluntary System," suggested that the large motoring associations should approach their members to give a weekly contribution. The Rev. Basil Bourchier supported, and the Rt. Hon. H. J. Tennant responded. The health of the chairman was proposed by Mr. L. E. Barrington-Ward, and seconded by the Lady Amherst of Hackney. The secretary announced that the subscriptions to the festival totalled £13,434.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

LOCAL GOVERNMENT (SCOTLAND) BILL.

IN the House of Commons on Wednesday, Dec. 5th, the House went into Committee on the financial resolution in connexion with this Bill. Mr. JAMES HOPE was in the chair.

Major ELLIOT (Under Secretary of State for Scotland), in moving the resolution, said that in Scotland the total local government expenditure was £33,000,000, and was at present something in the ratio of £13,000,000 from grants and £20,500,000 from rates. After this Bill had gone through the proportion between rates and grants would be something like £16,000,000 from grants and £17,000,000 from rates. First of all it was proposed to sweep away the assigned revenues, and so on, and create a general Exchequer contribution which would be fed annually by such grants as Parliament might determine. Secondly, this grant would be further fed by a sum to compensate for the de-rating grants and for discontinued grants. The third point was that this grant would be revised quinquennially. The fourth point was that the grant would be to maintain a given ratio permanently between the total rate and grant-borne expenditure. That was to say, that in the future there would be a ratio preserved between the money coming from the Exchequer and the rate-borne expenditure which was a variable one. Therefore the Exchequer contribution was also variable upwards. There was a guarantee against varying downwards. The fifth point was that the grant should deal with what were called necessitous areas by being distributed according to needs and abilities, and it dealt with the question of necessitous areas in the widest possible sense. As regarded the distribution of the General Exchequer contribution the principles of the scheme were the same in both England and Scotland.

The Labour View.

Mr. WILLIAM GRAHAM, speaking for the Labour Party, said that whatever might be the problems of local finance in Scotland they were aggravated beyond description by this Bill and by the undeniable confusion that it would introduce. The Labour Party had always pleaded that it was altogether unjust that the structure of the poor-law in Scotland, which was never designed to carry a load of this description, had had to obtain in the aggregate from the ratepayers in all parts of the country millions of money since the industrial depression began. There was every reason in the world for the plea of the Labour Party that this should be made a national charge. The transfer would be followed by far-reaching and impressive results. The question for Scotland as for England was whether there was any real merit in the block system of grants as opposed to the percentage system. The burden of the attack upon the percentage system had been that under it the Chancellor of the Exchequer of the day did not know what exactly he had to contribute to those local services year by year. There was no foundation for that argument, as the financial machinery of the House provided for review and free determination of the estimates dealing with those grants. Moreover, no one had ever suggested that there had been any waste or misdirection by the Scottish local authorities in expenditure under the percentage grant system. Having regard to the fact that the aggregate burden of the local rates in Scotland had bounded up until they were now £22,000,000, the proportion borne by the local authorities was so exceptionally high as to secure economy in the local services. He recognised that it was no use meeting the Government plan with a blind negative. They could easily mark off and arrange areas which could be treated specially as necessitous. By the Government scheme all kinds of fresh anomalies and new problems would be created in the necessitous areas. In a matter of this kind what they had to look to was a broad transfer from national funds and the extent to which such transfer would operate during the next 10 or 15 years. At the very heart of this problem there was the question of the funds to be provided to meet the necessary expansion of local services. If any new duties were imposed on the local authorities in Scotland they should clearly understand there was no real provision in the Government scheme of assistance from the Exchequer to meet the increased expenditure involved.

Development of the Public Health Services.

Dr. DRUMMOND SHIELS said that he was very disappointed that the Under Secretary of State for Scotland had omitted to make any comment upon, or to give any justification for, the proposed change in the method of financing public health services by bringing them into the ambit of a block grant instead of allowing them to continue under the percentage grant system. This was one of the most important matters in the Bill. The percentage grant system has been criticised on the ground that the more a district spent the more it got, but he thought that the Government would agree that in Scotland there was as yet no town or country district which had a really adequate public health system, or in which an excessive amount of money had ever been spent upon it. As a matter of fact they were not really abolishing the percentage grant system in Scotland. The portion which was to be included in the block grant was an infinitesimal part of the total sum, the bulk of which was still to be paid under the percentage grant system. It was a remarkable thing that the health services should be the one thing that had been put under the block grant system. The public health services were the most rapidly developing of all public services. He wondered whether that was the reason why those services had been selected for the change. He believed that the Minister of Health and the Secretary for Scotland were not unsympathetic to the development of the health services, but he strongly suspected the Treasury, which, as they knew, was a very powerful influence behind this Bill. Public opinion was ripe for a still larger development of these services. In many of the large towns in Scotland this year and the preceding year had been economy years, and yet this year was the one which was to be taken as the standard year, and if any development of the services now in existence were undertaken within the next five years it would mean that the expense would fall on the ratepayers and would have to be borne by a much smaller number of ratepayers than at the present time. That was a serious position. The hon. Member for Caithness and Sutherland (Sir A. Sinclair) had called attention to the fact, which was of great importance, that in his own county there was no maternity and child welfare service, and they knew that a number of other districts in Scotland were in the same position. Was it expected that any district which had no maternity and child welfare service at the present time was likely to establish one within the next five years, seeing that to do so would involve a very great increase in the local rates? There were figures to show that in Edinburgh last year in the case of mothers who had been given antenatal treatment there was a much lower percentage of mortality than in the case of those who had not been so treated. The figures showed that there were something like four or five times the number of deaths among those who had had no antenatal treatment as compared with those who had been previously attended. The importance of that was being realised, and in those cases where the service was not very adequate there was room for development, while in certain cases it had not been taken up at all. Was it likely that that would take place under this system of block grants? He asked that if the whole of the public health services could not be taken out of this block grant, that maternity and child welfare should at least be excluded from its operation and remain under the percentage system. For a number of years past the House and the Scottish Board of Health had put upon local authorities various new duties, some of them small and others very extensive. It was likely that in the next five years something of the same kind would take place. Not very long ago there was insulin, which the local authorities now had to supply, and there was a new duty imposed in regard to encephalitis. Under the Government's scheme localities would have to wait for five years before putting such developments into operation, or would have to put on the rates the whole expense of services which the House or the Scottish Board of Health might call upon the local authority to provide. It was obvious that some arrangement to meet that position should be made.

Block Grants v. *Percentage System.*

After further debate,

The LORD ADVOCATE (Mr. WILLIAM WATSON), dealing with the contention over the rival advantages of the block system of grants and the percentage system said that the main objection to the latter system was that under it the richer districts had a free hand in expenditure and the poorer districts were penalised. That was a very vital point, especially when they were considering the adequate development of, among other things, the health services. It was urged that the central authority should bear the whole burden. But the local authorities had some liabilities, and to expect the central authority on every occasion to be the person who was going to pay the extra expenditure, and in the case of the poorer districts the whole of the expenditure, was going too far. The question was: What was a fair proportion, and what was the fairest method of getting that proportion? The Government said that the block grant system was the fairer method of the two. They were just as determined in Scotland as the Ministry of Health was in England to see that maternity and child welfare services were fully protected and carried out.

The resolution was carried by 224 votes to 140—majority 84.

Medical Members and Local Government Bill.

At a meeting held at the House of Commons on Tuesday, Dec. 11th, attended by medical Members of the House, and by a deputation representing the British Medical Association, the medical aspects of the Local Government Bill were very fully discussed. It was decided that Lieut.-Colonel Fremantle and Sir Richard Luce should bring forward certain amendments designed to strengthen the Bill, but on the whole the deputation was understood to give general approval to the main provisions of the measure in regard to health matters, subject to confirmation by the Council of the Association at their meeting on the following day. An amendment, to which great importance was attached, will propose that the power given to a council under Clause 4 to deal with non-destitute as well as destitute persons by means of the health services which they provide under a series of Public Health Acts enumerated in the clause shall be made mandatory instead of permissive.

"Guillotine" Resolutions.

The House of Commons considered on Tuesday, Dec. 11th, a "guillotine" motion setting up a time-table for the subsequent discussions on the English and Scottish Local Government Bills. After several hours of debate it was decided to allot 17 days for the further stages of the English Bill divided as follows: Committee, 13; report, 3; third reading, 1. For the Scottish Bill 12 more days were allotted, divided as follows: Committee, 9 (one more than originally proposed); report, 2; and third reading, 1.

THE DISTRESSED AREAS.

On Wednesday, Dec. 5th, on the motion for the adjournment,

Miss WILKINSON called attention to the urgent need for clothing for the children in the necessitous areas, and asked whether it would be possible for the Government to give a Treasury grant.

Lord EUSTACE PERCY (President of the Board of Education) said that nothing he could say could exaggerate the extreme seriousness of this problem, but need they say that voluntary effort had so far failed to do its part of the task that it must be taken over as a State matter? In South Wales so far as nutrition was concerned the difficulty was that the cost of the food given to school-children was deducted from the poor-law relief given to the parents; but an agreement had been reached with the guardians that no deduction was to be made. Over the whole of Glamorgan the feeding of school-children was proceeding on the basis of medical selection, and in the Rhondda over 1000 children were being fed after medical certification. He sent down a medical officer a few weeks ago to look into the question of whether the standard applied was too stringent, and the report which he received was to the effect that the work was being thoroughly well done and that the ground was being covered, but that it was necessary that the medical inspection should be continued. That was being done at the present moment. His reports were that serious deterioration among children was being prevented. The question of Government assistance in relief of the distress was one which had to be, and would be, considered.

HOUSE OF LORDS.

THURSDAY, DEC. 6TH.

PROTECTION OF ANIMALS (AMENDMENT) BILL.

On the motion that the House do now resolve itself into Committee on the Protection of Animals (Amendment) Bill,

Lord DESBOROUGH said that he wished to explain at that stage the position of the Government in case at future stages of the measure any silence on their part might be misinterpreted. On the second reading he had done his best to show that the Government were not at all enthusiastic about it, and that they considered that its provisions were not of a workable character. Lord Banbury had had more than one interview with the Home Office and he was sorry to say that he had not been successful in removing the objections which they previously entertained. No complaints had been received by the Home Office that Section 3 of the Protection of Animals Act, 1911, had not worked satisfactorily up to the present, and it was the view of the Home Office that the present Bill could not be amended so as to make it a workable measure.

Earl RUSSELL said that it would be a waste of time to ask their Lordships to go on with a Bill which the Government had told them was quite unworkable. He therefore moved that the debate be adjourned.

Lord BANBURY, who was in charge of the Bill, said that the Under Secretary to the Home Office (Sir Vivian Henderson) had informed him on the previous day that the Home Office did not intend to oppose this Bill. He therefore suggested that their Lordships might pass the Committee stage, and if the Home Office had changed their minds before the third reading the House could then take what action they thought right.

After further discussion the motion to adjourn the debate was agreed to.

PRESERVATION OF INFANT LIFE BILL.

The House went into Committee on this Bill. The Earl of DONOUGHMORE was in the chair.

Punishment for Child Destruction.

Clause 1 of the Bill provides:—

(1) Subject as hereinafter in this subsection provided, any person who, with intent to destroy the life of a child capable of being born alive, by any wilful act causes a child to die before it has an existence independent of its mother, shall be guilty of felony, to wit, of child destruction, and shall be liable on conviction thereof on indictment to penal servitude for life: Provided that no person shall be convicted of an offence under this section if it is proved that the act which caused the death of the child was done in good faith for the purpose only of preserving the life of the mother.

(2) For the purposes of this Act, evidence that a woman had at any material time been pregnant for a period of 28 weeks or more shall be prima facie proof that she was at that time pregnant of a child capable of being born alive.

Lord ATKIN moved to leave out Clause 1 and to insert the following new clause:—

(1) A woman may be convicted of infanticide notwithstanding that the death of her child is caused by her in the course of delivery; and the term "newly born child" in the Infanticide Act, 1922, shall include a child while in the course of delivery.

(2) For the purposes of this Act the course of delivery shall be deemed to continue until the child has an existence independent of its mother.

He said that when the Bill came before the House for second reading he took objection to it upon the ground that it went much farther than was necessary and that in particular it exposed professional men to the danger of being charged with an offence which was a new offence, and one which it was unnecessary to put upon the Statute Book. He was prepared to admit that the present gap in the law ought to be remedied, and his amendment did in terms precisely provide for that position. The amendment proposed that instead of the new offence being created the offence of infanticide should be extended so as to include the case of the killing of a child by the mother in the course of delivery. The Bill as it stood went much farther than that in two particulars. In the first place it extended the offence to third persons other than the mother. He knew of no cases in which it had ever been suggested that there was a deliberate act of killing a child in the course of delivery, unless it was by a doctor or a midwife. From the nature of things it was practically impossible that there should be anyone else capable of killing the child during birth. He was very reluctant that a new offence should be created which would comprise professional men and professional women—because midwives now had to be licensed—and which could expose them to the possibility of a charge of this kind. It happened from time to time that the doctor had to make up his mind that in order to save the mother's life the child must be sacrificed. This Bill in the terms of it would make such a doctor liable to a new offence punishable by penal servitude for life unless he discharged the onus of showing that he did it in good faith for the purpose of preserving the life of the mother. He objected very strongly to any onus being put upon anybody to prove that he was innocent, and he thought it was very inadvisable that a new offence should be created under which professional men and women would carry on their very important vocations with a possibility of a criminal charge being brought against them, either by a disappointed parent or a mischievous attendant. He had made inquiries and he had not come across a single instance in the whole history of the administration of the criminal law where it had been suggested that there had been an improper act done to a child by a third person other than the mother in the course of birth. Under the present law coroners had the duty to hold inquiries on the births of children, including stillbirths, and he knew of no case where in such circumstances any suggestion had been made that any third person had committed an offence. It was quite sufficient to meet the only evil to which attention was originally called—namely, the case where a mother was supposed to have killed her child in the course of delivery. There was another provision in the Bill which was objectionable; that was that the offence was not confined to the killing of a child in the course of birth, but was extended to the killing of the child before delivery had begun, while it was still in the body of the mother, and she was still pregnant. That was an unnecessary proposal, because it

would overlap the existing law as to procuring abortion. The practice of abortion was very rife in these days, and caused where it was successful untold pain and suffering and in many cases death. The present law as to abortion provided that any person who used any means, either instruments or any other, with the intention of procuring a miscarriage, committed an offence which was punishable by precisely the same punishment as was provided in this Bill—namely, the maximum punishment of penal servitude for life. He was advised, and had found it to be so in books of authority upon medical jurisprudence, that it was really impossible to kill a child in the body of the mother without procuring a miscarriage, and without therefore obviously intending to procure a miscarriage as the natural result of the action taken. In that respect the provision in the Bill was unnecessary, and indeed was undesirable, because it weakened the law as to abortion by narrowing it and by creating an offence which required that there should be an intention to kill the child; whereas it was not necessary in the ordinary law as to abortion. He hoped that their Lordships would limit the scope of the Bill, because as it stood it was very undesirable from the point of view of the medical profession and the nursing profession.

A Grave Offence.

Lord MERRIVALE said that why Lord Atkin should be ready to leave one branch of this class of offence to be a felony, punishable by penal servitude for life, and as to the major area should say it was sufficiently dealt with by a slight provision creating a new misdemeanour, passed his comprehension. The offence was a most grave offence. There were aspects of the crime of abortion with regard to the living person and with regard to the unborn child which it was not necessary to dwell upon, but which emphasised the gravity of the matter. Lord Darling had framed a Bill which was accepted in principle by their Lordships' House and then sent to a Select Committee. All that the Bill was designed to do was to provide that in the case unprovided for the penalty of abortion should be incurred by those who were engaged in the act. That seemed to be entirely consistent with the policy which had been pursued in our judicial administration. He had great difficulty in seeing how this grave offence could be guarded against, in this particular in which there was almost an invitation to criminally minded people to take the action they were so ready to take, until they put the law on an even footing. Lord Atkin had been concerned about the effect of the proposals in respect of the liability of medical practitioners and registered midwives. He (Lord Merrivale) said that all due effect should be given to that legitimate concern. No self-respecting person, no person of any experience, wished to imperil a decent doctor who had performed a terrible task and had deprived a fellow creature of life. No one wished that he should be lightly exposed to criminal proceedings. But it was not the respectable medical practitioner who ran this risk, or the decent midwife; it was the people who at the present time practised abortion, and who in a vast number of cases escaped without any penalty because it was a crime most difficult to bring home to those who were guilty of it. He would regard it as a mockery to pass a Bill through that House which left the people who provided the means for this crime, and actually put it into effect, free of risk, and put such penalty as might be incurred upon the unhappy woman who for money they involved as an accomplice in a criminal transaction. It seemed to him that their Lordships would abundantly provide for the security of the respectable medical practitioner and the respectable midwife if a clause or subsection were inserted which provided that there should be no prosecution of a registered medical practitioner or a registered midwife without the sanction of the Attorney-General. He hoped their Lordships would not accept the amendment of Lord Atkin.

Lord PARMOOR said that it was a matter of very great importance that in questions of this kind they should not make the law harsher than was absolutely necessary in order that the crime might be suitably punished both as a deterrent and as a punishment in a particular case. The Bill as it stood was unduly harsh, and if Lord Atkin pressed his amendment to a division he (Lord Parmoor) would vote for it.

An Uncontrolled Evil.

Lord DARLING said that the amendment was only a new method of doing what the noble lord attempted to do when he moved the rejection of the Bill. The amendment if carried would leave a great part of the evil which the Bill attempted to prevent absolutely uncontrolled. It would deal with the case where a woman in labour purposely killed the creature before it had got a separate existence, and with that alone, and it would say that that offence was nothing more than an offence of infanticide which involved a comparatively slight punishment. As the law stood at present a woman who desired not to have a child born alive and continuing to exist could go to a professional abortionist—and there were many of them—and tell him that she was expecting her delivery at such a time and that before it had got a separate existence he was to kill it. It was the law of England that if this were done he would commit no offence whatever, and if the amendment were carried that monstrous condition of things would still be the law of England. Mr. Justice Talbot had assured him that there were far more of these cases than people who did not attend assizes had the least idea of. The proposal of the Bill was not suddenly forced upon an astonished world; it had been thought of for a long time. They were not creating a new offence, except in a very technical meaning of the word "offence." He could not accept the amendment, because it would be fatal to the Bill, and would practically give a charter to criminal persons to go on killing creatures who were almost living souls.

A Gap in Criminal Law.

The LORD CHANCELLOR said that in speaking on this Bill, which was a non-party measure, he was expressing his own and not the Government's views, charged perhaps with special responsibility having regard to his official position in the House. The Bill having been given a second reading, the House had committed itself to the principle that there was a gap in the criminal law which it was desirable to fill. They must consider what was the right way to stop that gap and determine exactly what the gap was. It was by law murder deliberately to take the life of a child when it had once become a separate entity and had in a legal sense a separate existence. It was a felony to kill a fœtus. But by English law a child had not got a separate existence merely by reason of the fact that it was born; it had to be proved that the child had acquired a separate existence and that circulation was separate and distinct from that of the mother. They must appreciate that attention had now been drawn to the fact that this was a way to procure what was practically abortion with impunity, and they were aware that unfortunately there were people who made a trade of procuring abortion, and a profitable trade in proportion to its danger. During the second reading debate on the Bill he had expressed regret that public attention had been drawn to what had not been generally known, and he feared that with the public knowledge now given advantage might be taken of this gap in our jurisprudence. Now that the gap had been disclosed it became incumbent on them to close it. The practice of abortion was rife in this country. If the amendment was carried an abortionist would be able to say to a woman, "I cannot take the risk of procuring an abortion, but tell me whenever your child is being born, and I can get rid of it with perfect safety and I shall have committed no offence at all." As to Lord Atkin's point about the difficulty which would be created for a doctor who was acting in good faith, he (the Lord Chancellor) advised Lord Darling to accept or introduce an amendment which would make it clear that the doctor was not charged with the burden of proving that he was acting in good faith; or, if their Lordships preferred it, to accept the suggestion of Lord Merrivale that no prosecution should take place under the Bill without the previous fiat of the Attorney-General. From experience he thought probably that would be a very adequate protection. He did not think that when they had made it clear that as long as the act was done in good faith it was no criminal offence that they were really putting the medical man in a position of embarrassment, because one knew that it was necessary sometimes to procure abortion for the sake of the mother of the unborn child, and he had never heard that any doctor had been embarrassed, or had hesitated in the discharge of that duty, by reason of the knowledge that if he was not acting in good faith he would be guilty of a criminal offence. At the same time he agreed that care must be taken to see that the offence was not made to go farther than was necessary. He submitted that the amendment ought to be rejected and that the Bill ought to be allowed to remain in its present form, but that, probably most conveniently on the Report stage, some provision might properly be inserted to secure that the position of the doctor, or the properly certified nurse, or midwife, or nurse acting as a legitimate *accoucheur*, should be adequately protected.

Lord ATKIN, in pressing his amendment to a division, repeated his view that if their Lordships passed the Bill in its present form there would not be sufficient protection for medical men and registered midwives. The Bill went much too far and involved possible hardship to professional men and women.

The amendment was defeated by 40 votes to 11.

Clause 1 and the remaining clauses of the Bill were agreed to and the Bill was reported without amendment to the House.

HOUSE OF COMMONS.

WEDNESDAY, DEC. 5TH.

Health of the Mercantile Marine.

Dr. VERNON DAVIES asked the President of the Board of Trade if he had consulted the Minister of Health with regard to the preparation of an annual report on the health of the merchant service; and, if so, what decision had been arrived at.—Mr. H. G. WILLIAMS, Parliamentary Secretary to the Board of Trade, replied: As a result of consultations which have taken place between the Ministry of Health and the Board of Trade, a joint standing committee has been set up to advise the two departments on matters of common interest affecting the health of the Mercantile Marine. The question of the preparation of a report on the health of the Mercantile Marine will be one of the first questions which the committee will be asked to consider.

THURSDAY, Dec. 6th.

Women Patients in Mental Hospitals.

Sir ROBERT NEWMAN asked the Minister of Health how many women patients of unsound mind were detained in borough or county mental hospitals in England and Wales where there was no woman member on the visiting committee; how many of these were detained in hospitals under the control of councils who had no women members and were prevented by law from coöpting women on these committees; and whether he intended to propose legislation making it compulsory that a certain number of women should be appointed to serve on all county and borough mental hospital visiting committees where women were detained.—Mr. CHAMBERLAIN replied: Information in regard to the first part of the question is not available. The point raised by my hon. friend in the latter part of the question has been noted for consideration when legislation dealing with the subject is proposed.

Factory Inspection in Glasgow.

Mr. BUCHANAN asked the Home Secretary the number of factories employing women in the city of Glasgow last year which were inspected by factory inspectors; the number not so inspected; and how many prosecutions took place as the result of visits paid.—Sir WILLIAM JOYNSON-HICKS replied: I am informed that the figures are 1259 factories inspected during 1927, 191 not inspected, and 13 prosecutions resulting from the inspections.

Disinfection of Taxi-cabs.

Mr. DAY asked the Home Secretary whether his attention had been called to the evidence given in a recent case in which it was stated that taximeter cabs in garages were used for sleeping in at night by homeless persons; and whether there were any regulations making it incumbent upon the proprietors of all taximeter cabs to have them regularly disinfected.—Sir W. JOYNSON-HICKS replied: Inquiry has been made at the garages of motor-cab proprietors and it has been ascertained that the use of taxicabs for sleeping in at night or for any unauthorised purpose is not countenanced by the proprietors of these vehicles. If it is done, it is done without their knowledge or consent. The disinfection of taxicabs is not a requirement in the Commissioner's Conditions of Fitness, but it is required by law when the vehicle is known to have conveyed a person suffering with an infectious disease. It is the general practice for proprietors to brush and dust the interiors of the cabs before they are taken from the garages to ply for hire, and in many cases it is known that the linings and cushions are sprayed with some form of disinfectant and the floors scrubbed with soft soap and hot water. Motor-cabs are continually under the surveillance of public carriage officers and numerous cases are reported to them annually where it is considered that the interiors of cabs are unsuitable in the public interest from the point of view of cleanliness.

MONDAY, DEC. 10TH.

The Distressed Areas.

Mr. DAVID GRENFELL asked the Prime Minister whether he would take steps to coördinate under Government auspices the various agencies which were taking part in relieving distress and hardship in the depressed industrial areas, and whether the Government would give a grant towards a fund for this purpose.—Mr. BALDWIN replied: The whole matter is under the close consideration of the Government, and a full statement will be made at an early date. I can, however, make the following statement this afternoon. Owing to the increasing number of agencies for the relief of distress in the coalfields, it has become necessary to set up some machinery for their coördination. At the same time the Lord Mayor has invited the Government to place at his disposal the staff and office accommodation necessary to deal with the additional work due to the recent expansion in the operations of his fund. The Government have gladly responded to this request, and Mr. Noel Curtis-Bennett, C.V.O., has been appointed as organising secretary of the fund. In addition to his duties in connexion with the Lord Mayor's Fund, Mr. Curtis-Bennett will also undertake the organisation of a general clearing-house of information for the purpose of coördinating the numerous efforts which are now being made to relieve distress in the coalfields. In this work of coördination the Government feel sure that they can rely on the cordial coöperation of all the various relief agencies.

Meals for School-children

Mr. JAMES HUDSON asked the President of the Board of Education (1) how many local education authorities in South Wales and Durham were carrying out in the schools the process known as medicinal feeding; of what diet did this process consist; and whether he was exerting any influence upon the authorities to adopt this process in preference to the provision of meals as allowed under the Education (Provision of Meals) Act. (2) How many local authorities in the mining districts of South Wales and Durham had adopted the Education (Provision of Meals) Act and were providing meals on the ground that children were hungry; how many authorities had not done so; and whether he had influenced the policy of the education authorities in this matter. (3) If he had made recommendations to the local education authorities as to the frequency of medical examination of all children in the schools of the distressed areas; and what length of time, computed on an average of all these children, elapsed between one examination and the next when these were undertaken for the discovery of such malnutrition as the Board considered requisite for the provision of school meals.—Lord E. PERCY replied: Of 20 local authorities in the mining districts of South Wales and Durham 12 are already providing meals for school-children, two are preparing to do so, and six are not, so far as I know, providing any meals. Five of the authorities who are now providing meals are doing so on a medical basis of selection, and I understand that one other authority is preparing to adopt this basis. Some months ago I communicated with the local government authorities in other mining areas suggesting that a special medical survey of the schools should be made before the end of the summer term. As a result of this survey feeding has now been undertaken in certain of these areas also. Children selected on a medical basis may be provided with ordinary dinners, or with special nourishment, such as milk, cod-liver oil, and malt. I have emphasised the importance of local authorities making adequate provision for malnourished children on many occasions during the course of this last year, and I have pointed out some of the advantages of the medical basis of selection as compared with the income basis, but I have put no pressure upon them to adopt the former in preference to the latter. Where the medical basis is adopted I have urged that borderline cases should be re-examined at frequent intervals, and that the schools as a whole should be periodically re-surveyed. In certain cases arrangements are also made for the temporary feeding of children between the visits of the medical officers if the head teacher has reason to believe that any child is not receiving sufficient food. Perhaps I may add that the distinction which appears to be drawn in the hon. Member's questions between medicinal feeding and feeding children who are hungry is based on a misapprehension. "Malnutrition" for this purpose means that the child is "unable by reason of lack of food to take full advantage of the education provided for it." This is the test prescribed by the Education Act, and the distinction is between selection on this basis by medical inspection and supervision of the children themselves and selection according to the size of the parents' income.

Mr. JENKINS asked the President of the Board of Education: (1) What number of Glamorgan children in the elementary schools were receiving milk and malt; whether these children were improving in health and physique; were they receiving the nourishment for seven days weekly or for school days only; and what percentage of the cost would be borne by the Board. (2) What percentage of children in the Glamorgan elementary school area who were attending school were in need of food; and, if there were any, would he make a grant for that purpose.—Lord E. PERCY replied: In the schools which have been surveyed by the Glamorganshire Education Authority the percentage of malnourished children was found to vary between 0·9 and 8·9. The number of school-children receiving milk during the week ending Nov. 30th was 698, of whom 57 were given, in addition, cod-liver oil and malt. I am advised that the improvement in health and physique shown by children who have received this treatment for some time is clearly marked. I understand it is provided on school days only. Grant is payable by the Board on the Authority's net expenditure at the rate of 50 per cent.

Anti-distemper Vaccine.

Mr. CRAWFURD asked the Minister of Agriculture if he was in a position to state whether the recently discovered anti-distemper vaccine was an effective preventive of that disease; and, if so, whether the Government was prepared to give aid in making its application universal.—Mr. GUINNESS replied: I am aware that the *Field* Distemper Research Committee has recently announced that an effective method of vaccinating dogs against distemper has been discovered. I understand that the Committee has offered to assist commercial laboratories or institutions willing to prepare the vaccine and make it available to the public. No public funds are available to assist the preparation or distribution of the vaccine. The Ministry's responsibility in respect of diseases of the dog is confined to diseases such as rabies, which are communicable to farm live-stock or human beings.

Mr. CRAWFURD asked whether, if this was an effective preventive, it did not mark a very important milestone in the treatment of dogs, and if the Government could help in the efforts which were being made in this direction by recommending a grant to help to make the application of the vaccine universal.—Mr. GUINNESS replied that he agreed as to the great importance of this discovery, but he did not see any necessity for a Government grant, seeing that the discovery was now past the experimental stage, and there was every hope that it would be taken up in the ordinary course by those whose business it was to supply these vaccines.

Dr. VERNON DAVIES: Is it not a fact that this is a direct result of experiments made on dogs?—Mr. GUINNESS: I believe that is so.

TUESDAY, DEC. 11TH.

Treatment of Blind Persons in Scotland.

Mr. BUCHANAN asked the Secretary of State for Scotland if he had received any request from the West of Scotland Committee for the Welfare of the Blind for permission to spend added sums for the treatment of the blind; if he could state the nature of such request; and what had been the answer.—Sir JOHN GILMOUR replied: I assume that the hon. Member's question has reference to recent proposals by the Glasgow and South-West of Scotland Joint Committee for the administration of the Blind Persons Act to establish a central clinic for the medical certifications of blind persons and to institute a scheme of allowances to blind persons who are unemployable. The Scottish Board of Health have approved the proposal to establish a central clinic. They have also indicated to the Joint Committee that they will be prepared to approve any schemes of allowances on reasonable lines that the Joint Committee may submit, but that no State grant will be available towards the cost of such a scheme.

Mr. BUCHANAN asked if it was not possible for the Secretary for Scotland to reconsider the question of a State grant for this very laudable service.

Sir J. GILMOUR said that the whole matter would come under review in the reform of local government with which the House was now dealing.

Mr. N. MACLEAN asked whether, as the Secretary for Scotland was so determined to approve of this particular object, that approval ought to carry with it some form of State grant.

Sir J. GILMOUR: Not necessarily.

Share Fishermen and National Health Insurance.

Sir ROBERT HAMILTON asked the Secretary of State for Scotland if he was able to state when the regulations covering the payment of contributions in respect of the admission of share fishermen to national health insurance would be published.—Sir JOHN GILMOUR replied: Notice of proposal to make a special Order will be published in the *Gazette* on Friday next, and a provisional special Order will be laid before the House immediately thereafter.

Relief of Distress in Yorkshire.

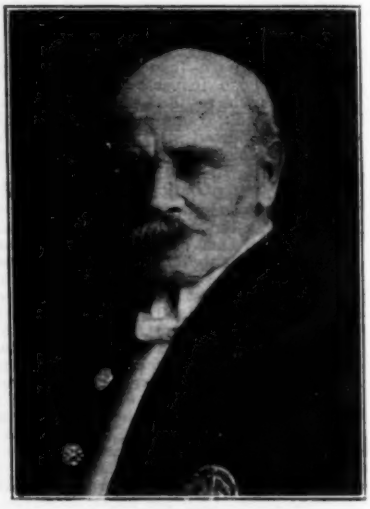
Mr. RENNIE SMITH asked the President of the Board of Education if he could give a detailed statement of the needs of school-children in the West Riding of Yorkshire as to food, boots and shoes, and clothing, and the extent to which these needs were being met by the activities of his department.—Lord EUSTACE PERCY replied: There are 22 education authorities in the West Riding. Of these, during the week ended Dec. 1st, 12 were providing meals for 5000 children. I have, as yet, received no official return from the West Riding County Authority, but I understand that they also are now feeding about 1000 children. Of the remaining nine authorities, some are understood to be making preparations for feeding. Surveys by the authorities' medical officers of the condition of the children were conducted in a number of the areas last summer, and recently in the Barnsley area. The results of the surveys varied considerably in different areas—e.g., 8 per cent. of the children were found to be malnourished in the districts of the county surveyed, and 3·6 per cent. in Barnsley. In Doncaster, Pontefract, Rotherham, and Sheffield the surveys failed to reveal at that time any abnormal conditions. The surveys are concerned primarily with the state of nutrition of the children, and I have not the same amount of information in regard to boots and clothing, but they tended to confirm what is generally known as to the unsatisfactory state of the children's boots and clothing in the distressed areas. Thus, in the West Riding survey of last summer 21 per cent. of the 44,000 children examined were found to have bad boots; in the recent Barnsley survey approximately 6 per cent. were returned as badly clothed.

Obituary.

SIR JOHN PHILLIPS, M.D. CAMB., F.R.C.P. LOND., J.P.

WE regret to announce the death of Sir John Phillips, honorary physician to the Queen, which occurred in London on Saturday last at the age of 73 years.

John Phillips was born at Pavenham, near Bedford, on July 6th, 1855, his father being Zachariah Phillips, of Birchmoor Manor, and his mother Ann Ayres, of Barford. He was sent to school at Bedford, from which he entered St. John's College, Cambridge, where he took the Natural Science Tripos before going on to clinical study at King's College Hospital, London. After qualifying M.R.C.S. Eng. in 1879 and M.B. Camb. in 1881, his bent soon showed itself in the direction of obstetrics, and he worked steadily up the ladder at King's College Hospital, where he was elected assistant obstetric physician in 1889 and full physician in 1898. On retiring after 17 years' service, in 1915, he was appointed consulting obstetric physician. During the greater part of this time he was lecturing on obstetric medicine at King's College, where he held the chair of obstetrics from 1904 to 1915; he was also physician to the British Lying-in Hospital and obstetric physician to the Bromley Cottage Hospital. He became a Member of the Royal College of Physicians in 1885, and was elected to the Fellowship in 1892.



SIR JOHN PHILLIPS.

Photograph by Elliott & Fry.

At King's College Hospital he succeeded Dr. W. S. Playfair on the staff, and he was associated for many years with this renowned accoucheur both in hospital work and in private practice. Like most of his generation of specialists, Phillips was more of an obstetric physician than a gynæcological surgeon. He had remarkable hands, which might have been specially designed by Nature for his work; the fingers were unusually long, fine, and flexible. To those who had the good fortune to see him at work his gentle

manipulative skill seemed almost uncanny. He seemed never to force and never to injure. With such attainments added to a natural charm and gravity of manner, and an impressive appearance, he quickly secured the best private midwifery practice in London, and held it for as long as he wanted. His experience and eminence early brought him to the notice of the Royal Family, and he was appointed honorary physician to the Queen in 1918. The surgery of gynæcology he had to teach himself—he inherited no tradition, and none of his immediate seniors at his hospitals had a surgical bent—and it was remarkable what a high degree of skill he reached. His diagnosis was most careful, and very few of his patients were operated on until they had spent at least a week in his ward under observation, including an examination under an anæsthetic, and every method of investigation which was deemed helpful. In consequence he scarcely ever met anything unexpected when he opened the abdomen. He was a deliberate, careful operator, who paid great attention to hæmostasis, and employed antiseptics liberally. Needless to add, his operative results were extremely good.

Phillips was far too busily engaged in the practice of midwifery to be a prolific writer during the last half of his professional career, but in his earlier years he contributed freely to the literature of his specialty. The "Outlines of Diseases of Women," which first saw the light in 1893, was designed for the use of the student and junior practitioner, and kept closely to first principles, stress being laid on the importance of accurate acquaintance with the anatomy of the female pelvic organs for the proper study of the diseases of women. This text-book ran through four editions between its first date of publication and 1906. He was particularly interested in everything that might lead to the amelioration of the pains of childbirth, and his contributions to medical journals include papers on the value of cocaine in obstetrics, and on the analgesic value of antipyrin administered intra- and post-partum. He contributed a chapter on plastic operations in gynæcology to the second edition of Allbutt and Playfair's System of Gynæcology, and on vaginal operations to Cheyne and Burghard's System. Ten years ago in our own columns he considered the lessons to be drawn from the seven maternal deaths which had taken place among some 2100 confinements which he had conducted in private over a period of 35 years. From 1893 to 1895 he was one of the co-editors of the King's College Hospital Reports.

Sir John Phillips married in 1890 Rachel Rattray, daughter of the late Robert Tweedie Middleton, M.P., D.L., by whom he had one son and three daughters. Her death in 1915 ended an ideally happy union. To this misfortune was added another—namely, a gradual failure of vision due to glaucoma, which was not arrested by the operation of iridectomy. For the last five years of his life he was almost completely blind, and during this time he was devotedly cared for by Miss Beatrice Margaret Naish, daughter of the vicar of Upnor, Kent, whom he married in 1926.

NORTHAMPTONSHIRE HOSPITALS.—On Saturday last Princess Mary opened an extension of the Manfield Orthopædic Hospital and laid the foundation-stone of two new operating theatres at Northampton General Hospital.

PAYMENT TO HOSPITAL IN ACCIDENT CASES.—At Leeds Assizes on Dec. 1st damages of £800 were awarded to a bricklayer who brought an action against a coöperative society for alleged negligent driving, whereby he was injured. The jury found for the plaintiff. In entering judgment for the amount claimed, Mr. Justice Roche directed that £160 be paid to the York County Hospital, where the plaintiff had been a patient.—The board of management of the Royal Salop Infirmary has been authorised to enforce claims for maintenance owing to the increasing demands made on the institution for the treatment of accident cases. Charges will be made where patients have private means or are insured, or have a legal claim for damages against the person responsible for the accident.

Medical News.

UNIVERSITY OF CAMBRIDGE.—The following degrees were conferred on Dec. 7th:—

M.D.—Wilfred Shaw.
B.Chir.—H. N. Webber (by proxy) and Harold Girling.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—The Council considered the following resolution, which was carried at the annual meeting of Fellows and Members on Nov. 15th.

That this fortieth annual meeting of Fellows and Members again affirms the desirability of admitting Members, who constitute nine-tenths of the College, to direct representation upon its Council.

Further, that in consideration of the importance of the health of the nation and of the fact that some 18,000 Members are in daily contact with the sick, it is most desirable, for the benefit of the public as well as of the College, that Members fulfilling such an important function should have some share in the deliberations of the College to which they belong.

The following reply to the resolution was adopted:—

In view of the recent postal vote of the Fellows, the Council is not prepared to take into further consideration at the present time the question of altering the constitution of the College so as to give Members of the College direct representation on the Council.

The main function of the College is to promote the study and practice of surgery. If there are any matters in this connexion affecting the health of the nation to which Members of the College wish to draw attention, an opportunity for so doing is afforded at the annual meeting of Fellows and Members, while the Council will at all times welcome and give careful consideration to representations made to it by any Member or body of Members of the College, in reference to matters which come within the functions of the College.

At a meeting of the Council of the College on Dec. 5th, with Sir Berkeley Moynihan, the President, in the chair, Prof. Ernest W. Hey Groves was elected a member of the Court of Examiners in the vacancy occasioned by the retirement in rotation of Mr. V. Warren Low.

At the Final Examination for the Fellowship held from Nov. 15th to 29th, 122 candidates presented themselves, of whom 39 were approved (38 men and 1 woman). Three candidates, although successful at the examination, have not yet complied with the by-laws and are therefore not entitled to receive their diploma. Diplomas of Fellow were accordingly conferred upon the following 36 candidates:—

H. S. Allen, Cambridge and St. Thomas's; C. B. Andreae, Guy's; J. C. Barrett, V.C., St. Thomas's; C. E. Beare, Middlesex; J. M. Buchanan, Melbourne and London; R. W. Butler, Cambridge and St. Thomas's; A. M. Claye, Leeds and London; J. B. Crabtree, St. Bart.'s; J. Crooks, Edinburgh; J. H. Doggart, Cambridge, St. Thomas's, and St. Bart.'s; V. H. Ellis, Cambridge and St. George's; G. M. Gray, Aberdeen; Dorothy W. Hall, Liverpool and St. Mary's; A. W. Holgate, Univ. Coll.; M. K. Hussein, Cairo and St. Bart.'s; B. L. Jeaffreson, St. Bart.'s; J. S. Loughridge, Belfast and St. Bart.'s; D. H. MacLeod, Middlesex; A. McMillan, Birmingham; C. M. Marshall, Otago; J. P. Monkhouse, St. Mary's; F. W. G. Nash, Middlesex; E. S. Page and G. E. Parker, Cambridge and St. Thomas's; T. V. Pearce, St. Thomas's; I. Price, King's Coll. and London; L. A. Richardson, Cambridge and St. Thomas's; A. Sourasky, Leeds; H. B. Stallard, Cambridge and St. Bart.'s; G. H. Steele, Univ. Coll.; S. N. Taylor, Manchester; C. I. Tuckett, Cambridge and St. Thomas's; J. M. Turner, Guy's; G. B. W. Walker, Cambridge and St. Mary's; J. J. Walsh, Dublin and London; and J. R. M. Whigham, St. Mary's.

Diplomas of Member were conferred upon the following:—

A. S. Rajasingham, Ceylon and Middlesex; and Florence Whitrow, Manchester.

Licences in Dental Surgery were conferred upon the following 48 candidates:—

F. Allott, C. A. W. Archer, and L. Ashling, Guy's; D. B. Atkinson, Royal Dental; W. L. Baker, Univ. Coll.; W. J. Brown and G. M. Conder, Royal Dental; H. J. Cracknell and H. M. Crombie, Guy's; H. H. Daniels and T. F. Dixon, Royal Dental; J. G. Douglas, J. G. T. Edmonds, and I. C. Fisher, Guy's; H. W. F. Freeth, Royal Dental; H. S. Gare, Guy's; A. A. Garfat, Univ. Coll.; U. Goldberg, Royal Dental; W. M. Graves-Morris, Guy's; J. Greenhalgh, Manchester; G. E. Hansen, C. S. Henderson, F. L. Hossell, C. N. Howitt, E. C. Irish, and F. R. Kearsley, Guy's; B. Kopkin, Univ. Coll.; S. Kutnowski, London; W. H. Lean, Royal Dental; C. M. Leckie and H. O. Lyne, Guy's; Muriel H. Millard, Royal Dental; W. N. Pike and P. J. Pretty, London; E. S. Rose, Royal Dental; W. J. Scobie and F. B. W. Sexton, Guy's; D. M. Shaw, Royal Dental; A. W. G. Small and J. T. F. Tingle, Guy's; W. Underhill and K. C. B. Webster, Royal Dental; D. S. H. Williams, C. B. Williamson, and H. Winter, Guy's; G. H. Wood, Univ. Coll.; S. F. Wright, Guy's; and A. Zamkov, Royal Dental.

ROYAL SOCIETY OF MEDICINE.—The Society's house and library will be closed from Saturday, Dec. 22nd, to Thursday, Dec. 27th, both days inclusive.

UNIVERSITY OF LONDON.—At a meeting of the Senate on Nov. 21st the degree of Ph.D. in Immunology was conferred on J. T. Cornelius, of the Lister Institute. Prof. G. E. Gask, director of the Surgical Unit, St. Bartholomew's Hospital, has been elected Dean of the Faculty of Medicine for the period 1928–30.

The Geoffrey E. Duveen Travelling Studentship in Oto-Rhino-Laryngology, of the value of £450, will be awarded annually to a student who has obtained the degrees of M.B. and B.S. in the University. The tenure of the studentship will in the first instance be for one year, which will be spent in study abroad, but such tenure may be extended for one or two years and during the extended period the student may be allowed to undertake research at the Royal Ear Hospital or some other laboratory approved for the purpose. Applications must be made on the prescribed form obtainable from the Academic Registrar of the University, and should be sent so as to reach him not later than Dec. 31st.

UNIVERSITY OF BRISTOL.—A dissertation by A. M. Critchley for the degree of Doctor of Medicine has been approved.

At recent examinations the following candidates were successful:—

M.D.

C. B. Perry.

FINAL EXAMINATION FOR M.B., CH.B.

Part I. (*including Forensic Medicine*).—*J. F. Coates, Eveline M. D. M. Collinson, *H. F. G. Corfield, J. Ll. W. Davies, J. J. J. Giraldi, R. D. Jones, *G. F. Langley, R. A. Lattey, R. P. Lucas, J. E. Newton, and S. C. Wake.

* With distinction.

Part I.—U. M. Hopkins, W. L. Sleight, and H. M. Strover.

Part II.—A. A. Dowling (with distinction in Obstetrics) and H. D. Pyke (with second-class honours and distinction in Obstetrics). G. R. Fells (with distinction in Public Health) and Ethel M. Redman. *In Group II.* (*completing examination*): Phœbe C. Vine.

Barbara J. Shapland passed the Final Professional Examination for the Diploma in Dental Surgery.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At the annual meeting of the College on Dec. 6th Dr. Robert A. Fleming was re-elected President for the ensuing year; Dr. Robert Thin was nominated vice-president; and Dr. G. Lovell Gulland, Dr. John Orr, Dr. William Fordyce, Dr. Edwin Bramwell, and Dr. A. Fergus Hewat were elected to form the Council.

HOSPITAL MEMORIAL TO LORD BUCKLAND.—Part of the memorial of the town of Merthyr to the late Lord Buckland is to be an enlargement of the Merthyr General Hospital, which will be called "The Buckland Extension."

ROYAL INSTITUTE OF PUBLIC HEALTH.—The next Congress of the Institute will be held at Zürich during Whitsuntide, 1929, from Wednesday, May 15th, to Monday, the 20th, under the presidency of Lord Meston, Chancellor of the University of Aberdeen. The Congress will be conducted in English in the following sections: (1) State Medicine and Municipal and Social Hygiene; (2) Industrial Hygiene and Industrial Diseases; (3) Child Welfare, School Hygiene, and Women and Public Health; (4) Pathology, Bacteriology, and Biochemistry; (5) Tuberculosis; (6) Climatology and Sports Hygiene; and (7) Veterinary Medicine and Meat Hygiene. Arrangements for travel and hotels are in the hands of Sir Henry Lunn, 5, Endsleigh-gardens, Euston, London, W.C. 1, from whom particulars can be obtained.

NATIONAL UNIVERSITY OF IRELAND.—The Senate last week made certain appointments to the staff of University College, Dublin. To fill the vacancy in the chair of surgery left by the death of Mr. J. S. McArdle, Senator H. L. Barniville was appointed professor of surgery, and Mr. H. S. Meade, professor of regional surgery. In dividing the duties of the chair of surgery into two the Senate has followed the same precedent as in the appointments to the chairs of medicine and midwifery, both of which were vacant in the last few years.

Mr. Barniville was educated at University College, taking his degree in 1911 and proceeding to the M.Ch. Degree in 1916. He has been for many years one of the visiting surgeons to the Mater Misericordiæ Hospital, and has been a member of the Senate of the Irish Free State since its establishment in 1922.

Mr. Meade was educated at the Catholic University School of Medicine and obtained the licences of the Royal College of Physicians and Royal College of Surgeons in 1909, proceeding to the Fellowship of the latter body in 1910. During the war he served with the Royal Army Medical Corps and with the French Army Medical Service. He has been one of the visiting surgeons to St. Vincent's Hospital for several years.

At the same meeting of the Senate Dr. A. R. J. Dungan was appointed lecturer in medical jurisprudence in University College, Dublin.

FREEMASONS' HOSPITAL.—The board of management of the Freemasons' Hospital and Nursing Home have bought a site of three and a half acres at Ravenscourt Park, Hammersmith, for the erection of their new buildings.

INSTRUCTION FOR D.P.H.—A three months' course of lectures and demonstrations on Clinical Practice and in Hospital Administration will be given at the North-Eastern Hospital, St. Ann's-road, Tottenham, London, N., by Dr. F. H. Thomson, medical superintendent, on Mondays and Wednesdays, at 4.45 P.M. and alternate Saturdays at 11 A.M., beginning Monday, Jan. 7th, 1929.

ROYAL STATISTICAL SOCIETY.—At a meeting of this society, to be held in the Hall of the Royal Society of Arts, John-street, Adelphi, London, W.C., at 5.15 P.M. on Dec. 18th, Mr. H. E. Soper will read a paper on the Interpretation of Periodicity in Disease-Prevalence.

CHELSEA CLINICAL SOCIETY.—A meeting of this society will be held at the Hotel Rembrandt, Thurloe-place, London, S.W., on Tuesday, Dec. 18th, at 8.30 P.M., when Mr. J. E. R. McDonagh and Prof. Alexander Fleming will open a discussion on Antiseptics. The meeting will be preceded by dinner at 7.30.

SOCIETY FOR THE STUDY OF INEBRIETY.—The next meeting of this society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, London, W., on Tuesday, Jan. 8th, 1929, at 4 P.M., when Dr. Catherine Chisholm will open a discussion on Alcohol and Drug Addiction in Relation to Women and Children.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—The annual dinner, held on Dec. 6th at the Savoy Hotel, was aptly described by the chairman, Prof. Winifred Cullis, as a family gathering to which certain privileged guests had been invited. The result was a large party, for something like 450 were present, showing that the privilege of an invitation was appreciated. The dinner, served at small round tables, was excellent and not too long, and this applies also to the speeches. The loyal toasts were honoured with especial fervour, since the chairman had called for an expression of sympathy with the Queen in her anxiety. Mr. John Buchan, in wishing prosperity to the school and hospital, said that his realisation of the value to the community of the work of doctors dated from the South African War, when he was in charge of concentration camps under Lord Milner. At this time also the beneficent activities of the committee of women workers, convened by Dame Millicent Fawcett, first developed in him a profound conviction of women's ability in every walk of life in which she was given a quarter of a chance. The story of the school, he said eloquently, was one of courage, hard work, patience, optimism, and good sense, and its development was based on the only true equality—equality of competence. The chairman, in a graceful response, referred to changes in the staff during the past year, to the extensions in the hospital, and to the additional educational facilities provided, of which the most notable was the opportunity afforded for teaching in psychiatry at the Horton Mental Hospital at Epsom under Lieut.-Colonel J. R. Lord. The school had been successful in academic matters and in sport; and the entry of students had increased. In this connexion the chairman deprecated the closing to women of all but one of the other teaching hospitals of the University of London, not only because it was an unmerited slur on women medical students, but also because the fact that the prosperity of the London (R.F.H.) School of Medicine for Women had been maintained and increased in the face of competition had been a matter of legitimate pride. Lord Riddell, in proposing the health of the guests, found for each an apt descriptive phrase. Miss M. D. Brock, headmistress of the Mary Datchelor Girls' School, replied to this toast with a witty comparison between the attitude of the public towards school mistresses and towards women scientists. Major Ian Hay Beith, who also replied for the guests, referred, with legitimate sadness, to the monotony with which the public demanded eternally from a writer the kind of work which they had decided he ought to provide for them, and he described Mr. Buchan as the one living author who seemed able to compel the public to read what he chose to write and over a very large range of subjects. The guests included Dr. Andrew Balfour, Miss Lilian Baylis, Sir Walter Fletcher, Miss E. C. Higgins, Mr. Alfred Levy, and the Editors of the *British Medical Journal* and *The Lancet*. Lady Briscoe thanked Prof. Cullis for presiding, and the latter modestly disclaimed praise for the success of the dinner, which, she said, was entirely due to the labours of the honorary secretaries, Dr. Haldin Davis and Miss S. Widdows. In this spirit of great good humour the company adjourned to the dancing hall.

NEEDS OF THE LONDON HOSPITAL.—Presiding at the quarterly Court of Governors last week, Lord Knutsford reported that the quinquennial appeal had so far produced only the disappointing result of £112,000. The hospital, he said, is sorely in need of radium. A new children's department and a new heart department are also required.

AN EDINBURGH SUBSCRIBERS' LEAGUE.—At the annual meeting of the League of Subscribers to Edinburgh Royal Infirmary it was stated that the members now number 120,000, and that the amount raised during the year recently closed was £21,400. The membership includes the miners of Fifeshire and the Lothians.

DONATIONS AND BEQUESTS.—Sir William Berry and Sir Gomer Berry have made a joint gift of £20,000, payable over the next eight years, to the King Edward VII. Hospital, Windsor, in connexion with the special appeal for £55,000 for the rebuilding of the two wards recently destroyed by fire and the erection of a new nurses' hostel.—Mr. Robert Ottley, of Molyneux Park Hotel, Tunbridge Wells, left, among other bequests, £2000 to be divided between the Royal Infirmary, Manchester, and the London Hospital.—Mr. George Edward Skinner, Redland, Bristol, besides other bequests, left £1000 to Müller's Orphanage, Ashley Down, and £200 each to the Bristol Blind Asylum, the Bristol General Hospital, the Bristol Royal Infirmary, the Bristol Royal Hospital for Sick Children and Women, the Bristol Eye Hospital, and the residue of the property between ten charitable institutions.—Mr. William Taylor Hague, of the Hollies, Werneth, Oldham, left £3000 for such institutions or societies having for their object the relief of the sick or of poverty as the executor may think fit, and £1250 to the Oldham Royal Infirmary.

SEMAINE INTERNATIONALE DE LA LUMIÈRE.—Under this title a congress and exhibition, organised by L'Institut d'Actinologie de Paris, will be held in the Grand Palais, Paris, from July 22nd-27th, 1929, under the presidency of Prof. d'Arsonval. From the 22nd to the 24th there will be an international congress at which the subjects for discussion are: (1) the choice of a unit of measurement for ultra-violet rays used in medicine; (2) the treatment of tuberculous peritonitis by light; (3) the prophylactic value of ultra-violet rays; (4) the treatment of rheumatic conditions by infra-red rays; and (5) other current topics in actinotherapy. From the 22nd to the 27th there will be an international exhibition of apparatus and one dealing with heliotherapy from the earliest times. On the 25th and 26th conferences will be held on the recent progress of actinotherapy, and during the week an elementary course on this subject will be given by the Director of L'Institut d'Actinologie (Dr. Saidman) and his colleagues. Other fixtures include demonstrations and a reception. Further particulars may be had from Dr. W. Kerr Russell, 12, Park-crescent, Portland-place, London, W. 1, secretary of the British section.

THE M.A.B. AND THE LOCAL GOVERNMENT BILL.—At a meeting of the Metropolitan Asylums Board held on Dec. 8th it was decided to send to the Minister of Health an expression of regret that its representations had not succeeded in bringing about any modification of his proposals so far as they affect the Board. The Board adheres to the view it has previously expressed on the subject of the transference of its functions to the London County Council—namely, that its experience had shown that the management of the central public health institutions of London was a work of sufficient importance and extent to justify the existence of a central body endowed with statutory powers on which the bodies dealing with local affairs in London should be adequately represented. Since its inauguration in 1867 the Board has enlisted the services of a large number of men and women who have devoted themselves to the work of providing, maintaining, and extending where necessary the public hospitals required by London for infectious diseases and tuberculosis, mental hospitals ambulance and transport services, a training ship, and other, lesser services. The whole of the debt of nearly £7,000,000 raised to meet capital expenditure on the erection, acquisition, and equipment of hospitals, &c., has been paid off with the exception of £336,000, representing the expenditure on grant-aided services of which the Government is responsible for one-half. The Board now has under its control some 25,000 hospital beds and in times of pressure employs a staff of 10,000 persons. The hardship felt by the Board at the transference of its duties is summed up in the following words: "The Board is to be involved in the changes through no shortcomings of its own. On the contrary, tribute has been paid by the Minister of Health and the London County Council to the efficiency of its organisation. Its duties have been steadily added to in recent years, and only this year Parliament has imposed upon it fresh and important responsibilities in connexion with the Metropolitan Common Poor Fund, and the Minister of Health has expressed his appreciation of the manner in which the Board has carried on this new work."

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
THURSDAY, Dec. 20th.—5 P.M.: DERMATOLOGY. (Cases at 4 P.M.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Dec. 17th.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Ear, Nose and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M.: Surgical, Medical, and Children's Diseases Clinics. Operations.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Dec. 18th.—5 P.M., Dr. J. A. Drake: Urticaria.
THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.

Appointments.

CARSON, F. S., M.D. Belf., D.P.H., has been appointed Admiralty Surgeon and Agent at Barrow-in-Furness.
HUNTER, A., B.Sc., M.B., Ch.B. Edin., Gardiner Professor of Physiological Chemistry in the University of Glasgow.
MAGUIRE, T. J. R., M.B., B.Ch. N.U.I., D.P.H., Assistant Medical Officer of Health, Co. Cork.
OVERTON, P. M., M.B., B.Ch. Leeds, Assistant Anæsthetist to Bolton Infirmary.
PARSONS, L. G., M.D., F.R.C.P. Lond., to the new Chair of Infant Hygiene and Diseases of Children in the University of Birmingham.
SCOTLAND, D. C., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for Brighouse, West Riding.
STIRLING, J. A., M.B., B.S. Durh., M.O.H., Medical Officer of Health, Chesterfield.
WEIR, A. L., M.B., B.Ch. Belf., B.A.O., a Medical Referee under the Workmen's Compensation Act (Northern Ireland) for the County and City of Londonderry.
King's College Hospital: CRITCHLEY, M., M.D. Brist., M.R.C.P. Lond., Junior Neurologist and Lecturer in Neurology; BICKERTON, J. M., B.Ch. Camb., F.R.C.S. Eng., Supernumerary Junior Ophthalmic Surgeon and Ophthalmic Tutor; EAST, C. F. T., M.D. Oxf., F.R.C.P. Lond., Medical Tutor; EDWARDS, H. C., M.S. Lond., F.R.C.S. Eng., Surgical Tutor; SAUNDERS, R. M., M.B., Ch.B. Edin., Obstetric Tutor and Registrar; LUCAS, H. A., L.R.C.P. Lond., M.R.C.S., Pathological Tutor; NEWMAN, C. E., M.D. Camb., M.R.C.P. Lond., and SMITH, R. C., M.B., B.Ch. Camb., M.R.C.P. Lond., Medical Registrars; BELL, J. G. Y., M.B., B.S. Lond., and WOOD, H. L. C., M.B., B.S. Lond., Surgical Registrars; and CAWTHORNE, T. E., L.R.C.P. Lond., M.R.C.S., Registrar in the Ear, Nose and Throat Depts.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 91, Finchley-road, N.W.—Sen. and Jun. H.S.'s. At rate of £200, £150, and £100 respectively.
Birmingham, Ear and Throat Hospital.—Second H.S. At rate of £150.
Birmingham, General Hospital.—Surg. Reg. Also Asst. Reg. Surg. O. At rate of £150 and £100 respectively.
Bootle Borough Hospital.—Hon. Radiologist.
Brighton, Royal Sussex County Hospital.—H.P. £150.
Bristol Royal Infirmary.—Hon. Asst. Surg. Also Hon. Anæsthetist.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist. Also H.P. At rate of £180 and £130 respectively.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Sen. and Jun. H.S.'s. At rate of £120 and £100 respectively.
Connaught Hospital, Walthamstow, E.—Hon. Surgeon.
Derby, Derbyshire Royal Infirmary.—Hon. Asst. Ophth. Surgeon.
Derbyshire Education Committee.—Asst. School M.O. £600.
East Ham Hospital, Shrewsbury-road, E.—Hon. P.'s and S.'s.
Exeter, Royal Devon and Exeter Hospital.—Sen. H.S. £200.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.
Grocers' Company.—Research Scholarships. £300.
Guy's Hospital, S.E.—Asst. Physician.
Hong-Kong University.—Chair of Medicine. £800.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Reg. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Surgeon.
Indian Medical Service.—Recruitment of European Officers.
Inverness, Northern Infirmary.—Hon. Surgeon for Ear, Throat and Nose.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £100.
Kensington, Fulham, and Chelsea General Hospital, 194, Finborough-road, Earl's Court, S.W.—Res. M.O. At rate of £100.
Leicestershire County Council.—Asst. Tub. M.O. £600.
London Homœopathic Hospital, Gt. Ormond-street, W.C.—Three Res. M.O.'s. Each at £100.
Luton Borough.—Asst. M.O.H., &c. £600.
Manchester Babies Hospital.—Jun. Res. M.O. At rate of £50.
Manchester, Royal Infirmary, Central Branch, Roby-street.—Jun. H.S. At rate of £100.
Middlesex Hospital, W.—Jun. Res. Asst. Anæsthetist. At rate of £80.
Middlesex Hospital and Medical School, W.—Medical Registrarship. £300.
National Hospital, Queen-square, W.C.—Res. M.O. £200.
Plymouth City Mental Hospital, Blackadon, near Ivybridge.—Jun. Asst. M.O. £300.
Pontypridd Urban District Council.—M.O.H., &c. £800.
Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Second Res. O. £175.
Queen Mary's Hospital for the East End, E.—Res. M.O. At rate of £200. H.P. and Cas. O. At rate of £150. Also H.P. and H.S. Each at the rate of £120.
Reading, Royal Berkshire Hospital.—H.P., Second H.S. Also Cas. O. Each at rate of £150.
Royal Army Medical Corps.—Twenty-five Commissions.
Royal Free Hospital, Gray's Inn-road, W.C.—Clinical Assistants
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
St. Helens, County Borough.—Deputy M.O.H. £700.
St. Marylebone General Dispensary, 30, Marylebone-lane, Cavendish-square, W.—Physician for Infant Consultations.
St. Mary's Hospital, W.—Med. Supt. £400. Also Medical Registrar. £200.
Sheffield City.—Police Surgeon. £1000.
Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100.
Sheffield, Royal Infirmary.—Jun. Aural and Ophthalmic H.S. At rate of £80. H.S. Also Asst. Cas. O. Each at rate of £80.
Shrewsbury, Royal Salop Infirmary.—H.P. At rate of £160.
Sutton, Surrey Downs Hospital for Children.—Jun. Asst. M.O. £500.
Talgarth, Breconshire, South Wales Sanatorium.—Two Asst. Res. M.O.'s. Each £250.
Truro, Royal Cornwall Infirmary.—H.S. £170.
University College Hospital, Gower-street, W.C.—Hon. Clin. Asst. in X Ray Dept.
University of London, South Kensington, S.W.—Geoffrey Duveen Travelling Studentship in Oto-Rhino-Laryngology. £450.
West African Medical Staff.—Vacancies for Pathologists in Nigeria and Sierra Leone. £800.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100.
Winchester, Hampshire County Council.—Asst. County M.O. £600
Winchester, Royal Hampshire County Hospital.—Asst. Hon. Surgeon.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Staveley (Derbyshire), Chelmsford (Essex), Crosby (Lancs.), Chesterfield (Derbyshire), Mossley (Lancs.), Kilbride (Buteshire), Bolsover, (Derbyshire), and Hoylake (Cheshire).

Births, Marriages, and Deaths.

BIRTHS.

HAYDON.—On Dec. 5th, at Kingsdown, Bideford, N. Devon, the wife of L. R. Haydon, L.D.S. Eng., of a daughter.
MARSH.—On Dec. 3rd, at Wellington-road, Edgbaston, the wife of Frank Douglas Marsh, F.R.C.S., of a son.

MARRIAGES.

DAHNE—RANDALL.—On Dec. 3rd, at the Parish Church, Wimbledon, Dr. S. F. Logan Dahne to Mary Katharine, only daughter of Dr. and Mrs. Martin Randall, of Wimbledon.
LINDSAY—MARTIN.—On Dec. 6th, at the West London Synagogue, Sidney S. Lindsay, M.B., B.S. Lond., M.R.C.S., L.R.C.P., of 443, New Cross-road, to Ruth, only daughter of the late Robert J. Martin and Mrs. Martin, of 228, Haverstockhill, N.W.3.
MORGAN—SMITH.—On Dec. 5th, at the Wesleyan Methodist Church, Crossgates, Leeds, George Morgan, F.R.C.S., to Ann, daugher of the late George Smith, of Cadney, Brigg, Lincs.

DEATHS.

BAKER.—On Dec. 2nd, at Devonport, after a brief illness, Thomas Baker, O.B.E., M.R.C.S., L.S.A., aged 76.
HALLIDAY.—On Nov. 21st, at his home, "Derry," Jamaica, B.W.I., Dr. Edward Vivian Halliday, aged 60.
PHILLIPS.—On Dec. 8th, at Queen's-road, N.W., Sir John Phillips, Kt., M.D., F.R.C.P., Honorary Physician to H.M. the Queen.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

NORTH KENSINGTON WOMEN'S WELFARE CENTRE.

THIS centre exists to give medical advice on birth control to those unable to afford the fees of a private medical practitioner. The advice is given by qualified medical women assisted by midwives. During the year ending July 31st, 1928, 1183 visits were paid to the clinic. Of these 351 were new patients, of whom 79 were sent by private doctors and welfare centres for medical reasons; 173 came on the recommendation of other patients. It is the policy of the clinic to discourage childless married women from making use of contraceptives unless they have good reasons for not wanting children, and, moreover, it is the custom to suggest the advisability of a second child. The fact that a perfectly safe and simple contraceptive has yet to be found and that too little is known of the effects of contraception are recognised at this clinic. The committee work in close coöperation with the Birth Control Investigation Committee, of which Sir Humphry Rolleston is chairman. It is hoped to secure over a long period of time some reliable data as to the prevalence, effectiveness, and after-effects of the use of contraceptives both as a whole and also in relation to the various methods employed.

In the copy of the fourth annual report of this centre which has reached us a medical supplement is inserted, wherein an attempt is made to answer the questions commonly asked by members of the profession visiting the clinic. The principle underlying the practice at this centre is to give the advice suited to the physical condition of each patient. A careful history is taken, and the patient examined both bimanually and with a speculum, in order that the most suitable contraceptive method for her may be ascertained. Some occlusive appliance as well as a spermaticide is always advised.

Occlusive Appliances.

The occlusive appliance most frequently recommended is some form of rubber cap to be worn by the woman. Three types are in use at the clinic:—

1. *The Dutch cap*, made in 12 sizes, is the one most frequently used. There are two classes of case in which it is unsuitable: (*a*) where the vaginal outlet has been so torn by childbirth that there is no sphincter action left; in these cases the cap will not stay in position; (*b*) cases of pronounced uterine prolapse.

2. *The Pro-Race cap* (three sizes) is designed to fit round the cervix itself. It is not suitable (1) in all pathological conditions of the cervical os; (2) when the intravaginal cervix is so short that there is not room for the cap to fit on; (3) for a patient with such short fingers, or such a long vagina, that she is unable to reach her cervix with her fingers.

3. *The Dumas cap* (three sizes) is useful for cases in which neither of the other two can be used. It fits up against the vault of the vagina, covering the cervix, and is unsuitable if (1) the cervix is long; (2) the tissues of the cervix are unhealthy.

Spermaticides.

The spermaticides employed are quinine, lactic acid, and vinegar.

Quinine in the form of the hypodermic tablet of quinine and urea hydrochloride (grs. 2) Parke Davis, is most often advised. This tablet is inserted above the cap, so that the cap holds it in position against the cervix. The cap and tablet are inserted when convenient and can be left in situ for 12 hours. No douching is necessary in this routine.

Lactic acid, made up into an ointment (3 per cent.) is advised, in conjunction with douching, in cases of excessive leucorrhœa. The routine in these cases consists in: (*a*) smearing the cap with ointment before inserting it, and (*b*) douching with 1 pint of warm soapy water before and after removing the cap. In no case should the cap be retained in the vagina for longer than 12 hours. Many women who live in overcrowded houses find it difficult to get the privacy and the opportunity to douche, and for this reason this technique is never advised unless there is, for other reasons, a need for douching.

In a certain number of cases (approximately 25 per cent.) both the quinine tablet and the lactic acid ointment are prescribed for use with the cap. These are cases where there is a certain amount of loss of tone in the vaginal walls and outlet, so that, although the cap does not slip out, it may alter its position slightly. Finally, in a small number of cases where it is impossible or inadvisable to fit the patient with a cap, a sheath is advocated for the husband's use, and a soluble pessary of quinine or lactic acid for the wife. Douching is optional in these cases. A cotton-wool tampon soaked in vinegar and water (half and half) and smeared all over with vaseline or any grease, is recommended

for those patients who cannot learn to adjust the cap correctly.

It is not claimed that these methods are perfect, but they can only be improved as knowledge increases.

Instructions to Patients.

After the patient has been fitted with a suitable cap, she is taught by the clinic nurse how to insert it within the vagina so that it covers the cervix. Great stress is laid upon the necessity of feeling the cervix through the cap, since if the cap is pushed into the anterior fornix the cervix is left exposed. The patient pays a second visit at the end of a week, when she is examined with the cap placed in position by herself. Further instruction is given if it is not adjusted correctly.

The examination made at the first visit is repeated at each subsequent six-monthly visit, and detailed notes are made. In this way any pathological condition requiring treatment can be detected, and the effect on the cervix of the use of rubber caps and spermaticides ascertained. It is the experience at this clinic that, with one possible exception, no ill-effects result from such use. Many patients speak of improved mental and physical health owing to the removal of the fear of pregnancy.

The patients advised to attend hospital for treatment include cases of the following: rectocele, cystocele (or both), erosion of cervix, retroversion of uterus, fibromyomata, and ovarian cyst. Private practitioners and official welfare centres are sending increasing numbers of patients. Among these are cases in which instruction in birth control is required on medical grounds, the Ministry of Health having approved that such cases should be referred to the clinic from the welfare centres.

It is of interest to note that the majority (over 80 per cent.) of patients attending the clinic during the last year have already practised some form of birth control—usually coitus interruptus. Satisfaction is expressed that these patients are now able to abandon a practice to which medical opinion is definitely opposed.

ENCEPHALITIS LETHARGICA IN IRELAND.

THE Department of Local Government and Public Health has issued a circular letter to all sanitary authorities in the Irish Free State, drawing their attention to the presence of encephalitis lethargica in several districts in Ireland, and suggesting that the disease should be added to the schedule of notifiable diseases. It is also suggested that cerebro-spinal meningitis and acute poliomyelitis should be added to the schedule in districts where this has not already been done. The circular states that "encephalitis lethargica or epidemic encephalitis is characterised by certain manifestations originating in the central nervous system. As in other general infectious diseases, the symptoms vary considerably in character and severity. In the abortive, mild, or transient type the symptoms are restricted to soreness of the throat, naso-pharyngeal catarrh, headache, vomiting, or diarrhœa, accompanied by slight pyrexia. In the severer forms of the disease, among those who survive the acute attack, many are later afflicted by motor disorders, characterised by rigidity and tremor, or by spasmodic movements and certain forms of paralysis and often by progressive lethargy and stupor. Various degrees of stupor have been noted. In the severest form of attack the patient is described as lying in bed like a log or resembling a waxen image in the lack of expression and of mobility. The prominent symptoms in a material proportion of recent cases have been lethargy and ocular paralyses, myoclonic movements, and sometimes twitching of the abdominal muscles. The disease attacks all ages with a preference for the early and middle periods of life and both sexes nearly equally. The disease appears to belong to that group of maladies (including also cerebro-spinal meningitis and acute poliomyelitis) in which the pathological agent is much more frequently present in the human organism than the clinical symptoms indicate. Although it is difficult to trace the infection from one person to another, it must be assumed that 'missed cases' and 'carriers' play a large part in the dissemination of these diseases."

THE HUMAN FLEA AND PLAGUE.

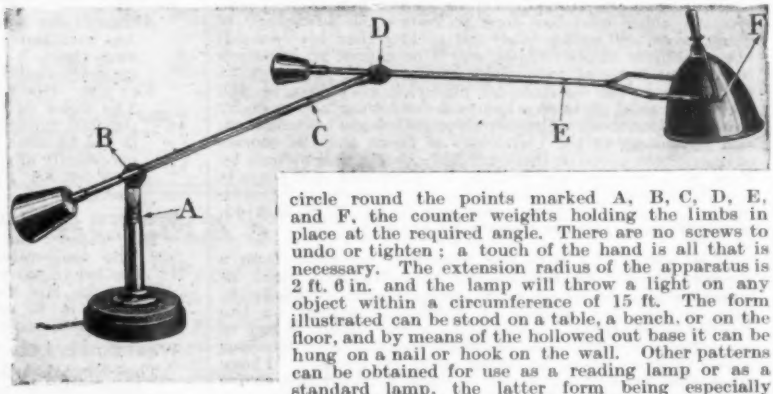
AT the end of July a mysterious disease was reported from the newly opened-up regions of Manchuria.[1] It raged among the Mongols, causing fever, vertigo, headache, occasionally diarrhœa, and often sudden death, and was not identified until a member of the Manchurian Plague Prevention Service arrived in the first week of September. He found plague bacilli in an inguinal bubo, and Dr. Wu Lien-Teh (known to many people in this country as W. L. Tuck) was sent up by the Marshal at Mukden. He found a curious state of affairs. Although medical practitioners were plentiful they had only the vaguest ideas of plague campaigns, and wasted much time and money in disinfecting rooms and clothing with carbolic acid while the sick and dying lay alone in the devastated villages where frightened police and coolies refused to go. The outbreak picked out a little village of 1800 inhabitants, and the history strongly suggests that it was brought there by a Mongol visitor who died in the local inn. One-fifth of the population of the village died and hundreds of inhabitants fled: fortunately Dr. Lien-Teh was able to check the widespread epidemic that the fugitives might have caused. He was fortunate in the enlightened coöperation of the Marshal and Civil Governor, who gave him the utmost support, both in money and in authority. His trained staff from Harbin set up a bacteriological laboratory in a goods office and plague vaccine was extensively used. About 8 per cent. of patients recovered. An interesting outcome of this campaign is the very strong impression conveyed to Dr. Lien-Teh from the clinical and laboratory work that *Pulex irritans* may—at any rate in Manchuria—convey the bacillus direct from patient to patient without the intervention of the rat.

SMALL-POX IN TIBET.

A TRAVELLER in Tibet has lately written some interesting notes[2] on the science of epidemiology as practised by its inhabitants. Small-pox infects large areas and is often extremely virulent, and its patients submit willingly to isolation and often notify themselves. The first treatment consists in the performance by the lama of the appropriate ceremonies, and if these fail the patient swallows suitably inscribed papers with the correct invocations. Should no good result follow, the lama applies exorcism, and if the patient dies he is buried, in contrast to the usual custom of cremation or exposure in the desert. Presumably, fuel being scarce, burial is performed to avoid infection. The custom of burning the dead man's skin rug, which Dr. Filchner once saw carried out, is another indication that the idea of infection is not unknown in those parts. An interesting observation he makes is that influenza and catarrh are practically unknown; they only appear when some white man opens a bale of cotton goods from Europe and releases the imprisoned bacteria.

THE "EVERYWAY" ELECTRIC LAMP.

AN electric lamp that can be put in any and every position, and will stay where it is put, should be a real boon in the consulting or operating room. Our illustration shows such a lamp. Each part of the apparatus will describe a complete



circle round the points marked A, B, C, D, E, and F, the counter weights holding the limbs in place at the required angle. There are no screws to undo or tighten; a touch of the hand is all that is necessary. The extension radius of the apparatus is 2 ft. 6 in. and the lamp will throw a light on any object within a circumference of 15 ft. The form illustrated can be stood on a table, a bench, or on the floor, and by means of the hollowed out base it can be hung on a nail or hook on the wall. Other patterns can be obtained for use as a reading lamp or as a standard lamp, the latter form being especially suitable for operations. The extension levers of the apparatus are nickel-plated, and the base is of wood laquered with a non-inflammable acid- and alcohol-resisting varnish. The lamp can be obtained from Messrs. Hawksley and Sons, Ltd., 83, Wigmore-street, London, W.1, and from other scientific instrument makers.

[1] North China Herald, Nov. 3rd, 1928.
[2] W. Filchner: Deut. Med. Woch., 1928, ii., 1897.

HUMAN FITNESS FOR INDUSTRY.

Two small volumes have just been issued, the titles of which might easily have been interchanged. One is by a physiologist,[1] the other by a psychologist,[2] and each reviews from a different angle the facts disclosed in recent years, mainly through the activities and publications of the Industrial Fatigue Research Board. The one shows *how* the human organism reacts to the milieu of modern industry; the other describes *why* it so reacts. Life to-day, in comparison with 200 years ago, is happier and healthier, because, by lightening human toil through the use of power-driven machinery, we are ever more and more shaping our environment to suit our requirements. But the way in which the means to this end, the new mills of industry and the old human factor, are acting and reacting each on the other is a fascinating study. It is the study of industrial fatigue, which has now passed through an experimental period during which it was far more talked about than understood, and has settled to the stage of painstaking observation and experiment—a stage wearisome to the public but entrancing to the worker. Now and again a report of solid worth, though not easy to read, discloses some new fact or facts. But the additions to the edifice which is being built out of our knowledge concerning human capacity are apt to escape notice. Prof. E. P. Cathcart embodies in his small book lectures given to engineering students—potential works' managers. Herein is clearly explained the practical bearing upon workshop practice of the new knowledge. The physiology of activity is described and of fatigue and monotony. The possibilities of alleviating fatigue, by suiting hours of labour to the requisite physical effort, by fitting the worker to his work, and by the adoption of more convenient methods are explored. The way in which the environment affects working capacity through the influence of ventilation, heating, humidity, lighting, noise, sitting accommodation, and design of machinery is clearly set out. Prof. Pear has been less successful. He seems possessed with the idea that modern industry is some demon specially devised for mangling the mind of man. He shows little appreciation of the advances of recent years and of occupational life as it was lived in pre-machine days. M. C. Buer, in a survey of Health, Wealth, and Population in the Early Part of the Industrial Revolution, has described it as life in overcrowded and soul-destroying hovels, where monotony, if it only meant freedom from the irritation of sickness, was a glorious relief from that bodily pain and ill-health which ended the life of the manual worker at 45. Prof. Pear does not supply practical wisdom which may be put to everyday use, but looks for motives behind action. A chapter dealing with the psychology of laziness makes good reading; it tells clearly how we may react mentally to disagreeable chores, but hardly give sufficient weight to the possibility that Willie's weariness may depend upon endocrine deficiency. This work does not lead us much further.

MEDICAL EDUCATION.

THE Rockefeller Foundation continues to issue its useful and interesting accounts of the equipments and methods in use in teaching medicine and the medical sciences in various parts of the world. The tenth series[3] contains 33 well-illustrated articles covering a range from Singapore to Chile; three of them are on medical libraries and how to use them. Every teacher who has done it knows the advantage of going about and seeing other institutions than his own and other methods of instruction, and if he cannot go in person to the institute of physiology and general pathology at Debreczen or the institute for nutrition at Tokyo, he will get some useful hints on what to do and what not to do by reading about them. The schools of pathology, bacteriology, and physiology in the University of Leeds and the courses of instruction given in them are described in this volume by Prof. M. J. Stewart and Prof. B. A. McSwiney, and there is a useful account of the demonstration of biological experiments by optical projection methods by Dr. M. S. Biskind, of the Western Reserve University.

M.D. writes: I have the misfortune to suffer from a chronic osteitis of the lumbar vertebræ and right os innominatum, entailing much pain, which especially in later months has yielded in wonderful manner to the exhibition of aspirin. I should be much obliged if any of my colleagues would give me their views as to deleterious effects likely to follow on taking about grs. 30 daily. I have taken that amount for about one and a half years, so far as I can tell without harm.

[1] The Human Factor in Industry. By E. P. Cathcart, C.B.E., M.D., F.R.S., Gardiner Professor of Chemical Physiology, University of Glasgow. London: Humphrey Milford, Oxford University Press. 1928. Pp. 105. 5*s*.

[2] Fitness for Work. By T. H. Pear, M.A., B.Sc., Professor of Psychology, Manchester. London: University of London Press. 1928. Pp. 187. 5*s*.

[3] Methods and Problems of Medical Education. Tenth series. Rockefeller Foundation. 1928.

THE KING'S ILLNESS.

OFFICIAL BULLETINS.

(*Continued from p. 1222.*)

THE following is the text of the official bulletins which have been issued during the King's illness by Sir Stanley Hewett and Lord Dawson.

WEDNESDAY, DEC. 5TH. 8.15 P.M. (Signed also by Sir Farquhar Buzzard and Sir Humphry Rolleston.)

Though the King has had a quiet day the temperature has risen to a point higher than at the same hour last evening, showing that the recrudescence of infection is still active. The strength is maintained.

THURSDAY, DEC. 6TH. 10.45 A.M.

The King has passed a fair night and the temperature this morning is lower. The general condition is slowly improving and the infective process, which remains severe, is becoming more localised.

8.20 P.M. The King's general condition remains the same as that reported in this morning's bulletin. The localisation of the infection at the base of the right side of the chest is rather more defined, which conforms to the progress of the illness during the last two days. (Signed also by Sir Farquhar Buzzard and Sir Humphry Rolleston.)

FRIDAY, DEC. 7TH. 11.30 A.M.

The King has had some restful sleep and his general strength is maintained. Further investigation of the right side of the chest will be undertaken during the day.

8.15 P.M. His Majesty has not had a restful day. A radiological examination was carried out this afternoon. Neither this nor exploration by needle, previously carried out, has disclosed any appreciable amount of pleural effusion. The general condition remains unchanged. (Signed also by Dr. H. Graham Hodgson.)

SATURDAY, DEC. 8TH. 11.15 A.M.

The King has had some hours of sleep. The temperature is still raised on account of the local lung condition. The general condition is the same.

8.15 P.M. The King has passed a quiet day with some sleep. The raised temperature persists, because the inflammation of the lung must of necessity be slow in its progress towards repair. (Signed also by Dr. H. Graham Hodgson, Sir Humphry Rolleston, and Sir Farquhar Buzzard).

SUNDAY, DEC. 9TH. 11.45 A.M.

The King has had several hours' sleep. The prolongation of the fever is having the inevitable effect of producing a certain measure of exhaustion. The pulse, however, remains steady.

8.30 P.M. The King has passed a quiet day, but there is no diminution in the exhaustion referred to in this morning's bulletin. The pulse remains steady.

MONDAY, DEC. 10TH. 11.30 A.M.

Although the King has passed a disturbed night, there has been some fall in the temperature this morning, and there is also a slight improvement in the general condition. Anxiety, however, must continue.

8.45 P.M. His Majesty the King has had a quiet day. The signs in the lung have improved. The fever persists, though it is not so high as last evening, and is due to some return of the general infection, which necessarily affects the condition of the heart. (Signed also by Sir Farquhar Buzzard and Sir Humphry Rolleston.)

TUESDAY, DEC. 11TH. 11.15 A.M.

His Majesty the King has had several hours' sleep. The temperature remains high, but there is no further impairment of strength.

8.30 P.M. His Majesty the King has had a quiet day. There is no increase in the exhaustion, and the pulse remains steady.

WEDNESDAY, DEC. 12TH. 10.30 A.M.

The King has had some hours' sleep. The slight improvement noted late last night is maintained, the temperature being somewhat lower and the general condition a little better.

4 P.M. (about). The slight improvement in the King's condition noted this morning is maintained. Some purulent fluid round the base of the right lung was removed by puncture this morning, and further drainage will be necessary. (Signed also by Dr. L. E. H. Whitby, Sir Farquhar Buzzard, and Sir Humphry Rolleston.)